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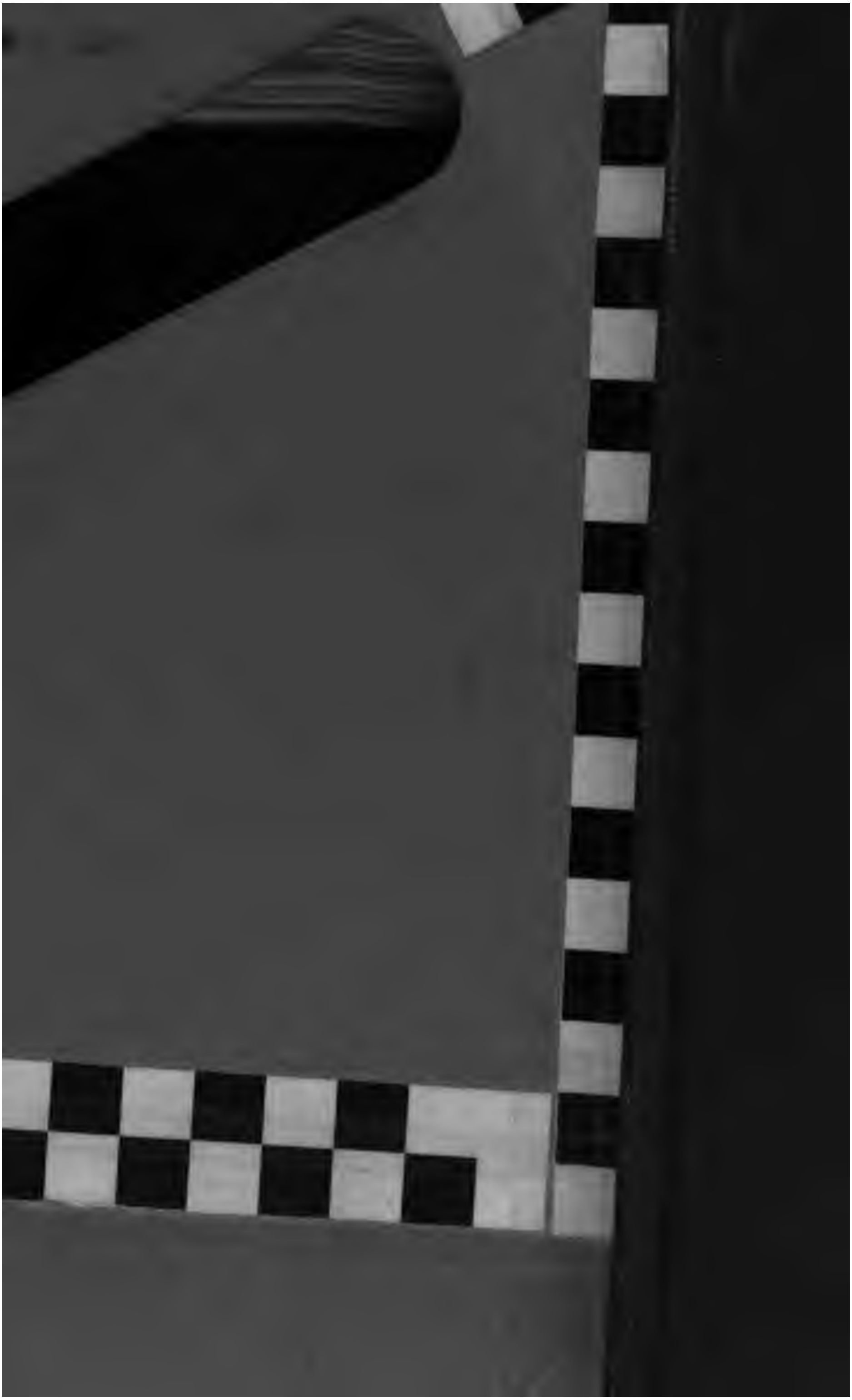

THE

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AND

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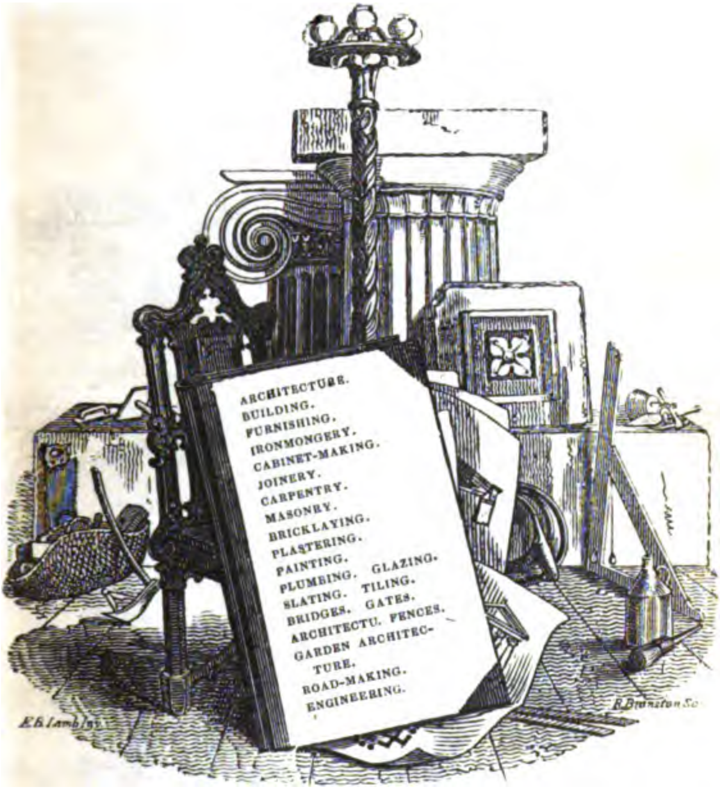

CONDUCTED BY J. C. LOUDON, F.L.S. Z.S. &c.

AUTHOR OF THE ENCYCLOPÆDIA OF COTTAGE, FARM, AND VILLA ARCHITECTURE
AND FURNITURE.

VOL. IV.

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PREFACE.

All that is necessary to be said of the present Volume, in the way of preface, is to refer the reader to the General Summary, p. 553., and to the Table of Contents.

J. C. L.

Bayswater, November 15. 1837.

ERRATA.

In p. 449. line 12., for "24 ft.," read "2 ft.;" line 6. from the bottom, for "base line *d*," read "base line *b* *n*." Insert the letter *g* on the pinnacle of the woodcut.

In p. 512. lines 13. and 14., for "diameter of the pillar: but here the wall and buttress are reduced," read, "diameter of the pillar, but here, the wall and buttress being reduced."

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THE

ARCHITECTURAL MAGAZINE.

JANUARY, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *On the Use of Allegory in Architecture.* Translated from the French of M. QUATREMÈRE DE QUINCY. By P.

THE word Allegory, at first sight, does not appear to relate to architecture; for, although the public buildings of all ages and countries are covered with emblems and allegorical figures, still they must be considered as belonging to sculpture, or as ornaments, rather than as component parts of the buildings; and they are as completely independent of architecture as that art is of them. Allegory, in fact, belongs only to those arts which are direct imitations of nature; and it consists in making the forms of natural objects express abstract ideas. Notwithstanding this, though architecture is not an art of imitation, there are some cases in which it has been applied to Allegory; though, as the ideas susceptible of architectural expression are as few as the figures and signs that compose its language, instances of this kind are of rare occurrence.

One genuine architectural allegory was to be met with in the Temples of Virtue and Honour, which were built by Marcellus at Rome, and the situation of which conveyed not only an emblematic meaning, but a moral lesson. Marcellus, having wished to dedicate the riches he brought from Sicily, was prevented from carrying his original design into execution by the high priest (whom he had, nevertheless, previously endeavoured to propitiate), under the pretext that one temple could not hold both divinities. He therefore built two, so arranged side by side, that it was necessary to pass through the Temple of Virtue, in order to reach that of Honour: wishing to make it understood, that by virtue alone honour can be attained. These temples were situated near the gate Capena.

Other temples were likewise constructed to convey allegorical ideas: such as the Temple of Vesta built by Romulus, and the one dedicated to the same goddess at Mantinea; the plan of both being derived from the figure of a burning hearth. A cir cular temple, dedicated to the Sun, in Thrace, had for its model the disk of that luminary. A symbolic meaning is also discoverable in other antique edifices; such as in the portico of Olympia, dedicated to the seven liberal arts; where, according to Plutarch, any verses spoken or recited were repeated seven different times by an echo. A temple of Mercury, represented on a medal of the Emperor Aurelian, may be admitted into this class. This edifice, instead of being supported by columns, rested upon Hermes, or Termini, as they are now called. Upon its pediment were represented a dog, a cock, and a tongue; figures which signify fidelity, alertness, and eloquence.

Such are examples of the kind of allegory of which architecture is susceptible. The monuments of Egyptian art, the construction of which was directed by the priests, presented, perhaps, similar symbols to the mind, and were once intelligible to every body. Their meaning is now lost, but may be recovered, as well as the art of deciphering their hieroglyphics. This grand method of describing thoughts, and employing immense characters to fix them for ever, might well belong to the national genius of Egypt.

From examples like these, some people of a systematic spirit have imagined that all architecture might be reduced to an allegory, and clothed in an emblematic veil. According to them, architecture having sprung, like other arts, from religious worship, must have participated in those mysterious emblems, which they consider to have been invented only to hide or preserve the precious deposit of truths of all kinds. They do not see in a pediment merely the representation of a roof, or the roof itself; but, by the chance resemblance of a necessary shape to a geometrical figure, the pediment becomes in their eyes a mysterious triangle, emblematic of Divinity. Columns, to them, are no longer supports required to sustain architraves and superstructures: they fancy they owe their origin to sacrificial stones, to Hermes, to symbols, to the first statues of the gods, &c. In the like manner, pedestals become altars; and friezes, entablatures, modillions, cornices, and capitals, which have been decorated with allegorical designs, allegories in themselves.

Thus, by an absurd transposition of simple ideas, and by neglecting to distinguish between accidental and essential parts, architecture becomes totally changed, and the result produced is mistaken for the principle producing it. These strange systems, which scarcely merit refutation, arise from the ignorant and false ideas that are entertained concerning Allegory, of which there are two distinct kinds. The first of these sprang up in the early ages of society, from the figurative mode of speaking and writing in those times, and which only appears mysterious at the present day, because the mode of speaking and

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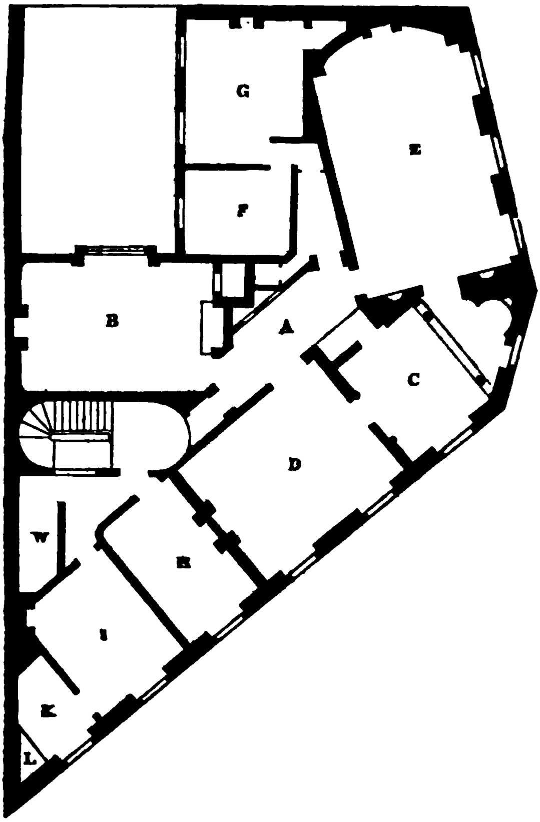

made entirely independent of any other; instead of five doors, has only two, one of which might be dispensed with; yet, as in such case there would require to be a sham door, to correspond with that on the other side of the sideboard, advantage is taken of this circumstance to place a closet in that situation, where some articles of plate and china might be kept; should there, however, be any objection to, or else no occasion for, doing so, the matter would be easily settled by locking the door altogether, and letting it pass for a sham one, rather than what it was intended for. The alteration, too, in respect to the window, cannot but be allowed to be a decided and very material improvement, whether as regards the symmetry of the room, or the distribution of light; and, in order both to form an *embrasure* to the window, and give the appearance of greater thickness to the walls, it is made to project externally. Besides these improvements (such, at least, I am pleased to fancy them), the room itself is considerably enlarged, both by some increase of length, and by the angles not being cut off, as in the original plan.

On the other side of the vestibule, we have an anteroom (C), communicating with two drawingrooms (D and E), also accessible from the vestibule, each of which is more than double the size of those marked C and E in the plan already described. Thus, these three rooms *en suite* would produce an air of spaciousness which the house could not before boast of; to say nothing of the greater attention paid to symmetry, of the more convenient situation of the fireplaces, or of their being quite detached from bed-chambers. Neither is it by any means an unfavourable circumstance, that all these rooms are not in a direct line: on the contrary, their extent would seem all the greater, in consequence of its not being distinctly perceived at the first glance, when the doors between them were thrown open. Some, perhaps, may consider it either an oversight or defect, that there is no fireplace in C; yet, that not being intended as a sitting-room, although it might certainly be used as such whenever the warmth or mildness of the weather rendered a fire unnecessary, the want of a fireplace hardly amounts to a valid objection, especially as a sufficient substitute for one might at any time be provided by placing a stove in the large niche at the end facing the folding doors. This last-mentioned room might be fitted up as a library, and used as such alone, or as that and the ordinary sitting-room; or else C might be made to serve both as anteroom and library, the books being kept locked in glass cases. It should be observed, that the door opening from the lobby into C must be glazed with ground glass, otherwise that vestibule would be nearly dark; since very little, if any, light could be derived from the staircase, and even the light thus obtained would be but barely sufficient to obviate positive inconvenience. Of an evening, it might be just as well lighted as any of the rooms.

The bed-rooms (F, G, H, I) are the same in number as before; and to one of them a dressing-room (K) is attached; but the other three have no such appendage to them. This circumstance, however, I by no means consider a material drawback on the plan, since it appears to me hardly worth while to make any sacrifice in what is more important, in order to secure what may be so very well dispensed with. It is, surely, no very great infringement of *bienséance* for a person to make use of his bed-chamber as a dressing-room: far less so, in my estimation, than the practice, adopted without scruple by those *arbitri elegantiarum*, those fastidious observers of the το καλον and the το πρεπον, the French themselves, of admitting visitors into such domestic penetralia, the doors of which ought to be closed against other intruders than chambermaids, doctors, and nurses.

I admit, however, that in France such custom may have its use; since, were it not for the attention the people are thus induced to bestow on their sleeping-rooms, they would frequently be in a most slovenly condition.

M might be used as a linen wardrobe, or there might be a bed there for one servant, sleeping accommodation for the others being provided in an *entresol* above some part of this floor; but, as my object extends no further than to show how much better the part of the plan under consideration might have been laid out, I may very well be excused from going into matters that do not immediately relate to my main purpose.

The next plan (*fig.* 4.) is a variation of the preceding, and, in some respects, for the better, although in others hardly so good. The dining-room (N) is not at all altered otherwise than as the sideboard is enlarged by its being extended on one side of the recess: yet that is entirely optional; for, by removing *w* to *x*, which is now merely a lighted passage leading to it, there might be a closet to the dining-room, as in the former case. One of the principal recommendations of this second plan is, that the lobby, or vestibule (O), is rendered more spacious and

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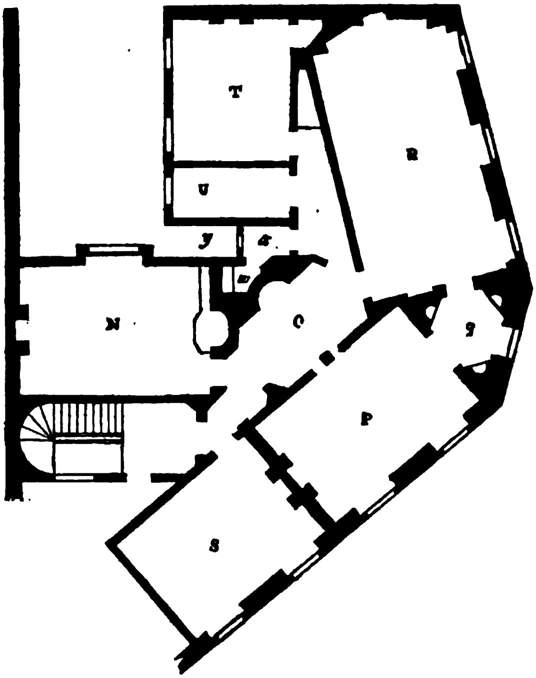

better shaped; and the large niche, or recess, facing the door leading into P would produce a good effect, and especially of an evening, if there were candelabra or a tripod with lamps placed in it. The ceiling, or half dome, of this recess would be a skylight, as it would rise above the parts marked *w* and *x*, and there would be nothing over them.

According to this plan, there would be one room less, inasmuch as the anteroom is taken away; but, then, some amends would be made for this by the improvement in the vestibule, which might be considered as a kind of ante room; while the drawingroom P would certainly gain much by the change, it being considerably extended by a hexagonal alcove (*q*) with a window in it. The opening from the room to this might be either an arch or between antæ; and within these might either be niches, as indicated in the plan; or those sides of the alcove might be fitted up with bookcases, about 6 ft. high, recessed in the wall; and above them might be large panels of mirror, which, were there a lamp or chandelier suspended here from the ceiling, would produce a brilliant effect. The other drawing-room (R) would have wide folding doors at the end opposite the fireplace, one half of which would be sham; or, rather, there would be a real door and sham door placed together, and divided by a central ornamental pilaster, so as to form one composition. If in this part of the plan something is lost by taking away the anteroom, on the other hand something is gained, the bed-room S being very considerably larger than that marked H in *fig.* 3.; so much so, that, in case there should be necessity for doing so, it might be partitioned off into two, very little smaller than the one just referred to. The bed-room T is also somewhat improved; but that marked U is certainly not at all benefited by being so much reduced in size: it might, however, be increased by taking in the space *y* (making there an alcove for the bed), and lighting *w* and *x* by skylights, from an open area above them. In fact, were not the plans already with the engraver, it is thus that I should now alter the part I am speaking of; for, unless the space *y* be added to the bed-room U, it would be better to transfer the water-closet (*w*) to that situation; which being done, the recess in the vestibule (O) might be greatly enlarged, as the passage *x* would bear to be made narrower than it now is.

Having pointed out every thing that calls for notice, I shall now, instead of making any additional comments, conclude at once with the somewhat hackneyed quotation: —

> "Siquid novisti rectius istis
> Candidus imperti; si non, his utere mecum."

REVIEWS.

Art. I. *Transactions of the Institute of British Architects of London.* Sessions 1835-36. Vol. I. Part I. London, J. Weale, 59. High Holborn.

We have received this interesting volume just in time to give a general idea of its contents, intending to turn to it afterwards when we have more leisure. It commences with an address, showing the advantage which architecture and the public are likely to derive from an association similar to those which exist in the case of most other arts and sciences. The greater part of this address is given in our Vol. II. p. 305, 306. The regulations follow, and next, the report of the council, read at the annual general meeting, held on May 2. 1836, and which is noticed in our preceding Volume, p. 288. This report was drawn up by P. F. Robinson, Esq., V. P., and contains some interesting remarks, of which we can only at present quote the following: —

> "Whether the animadversions against the profession have been deserved or not, we should hope may admit of some doubt; yet, although much has been done towards the improvement of London, the style of architecture is not, in all cases, so pure as could be desired. The cause may be difficult to solve; and yet we are inclined to consider it mainly attributable to that system of exclusion, so severely practised for some years past, by which the great body of the profession has been entirely shut out from all chance of obtaining any portion of the public works. The injury done by thus closing the door to exertion was manifest, the good arising to the public, certainly problematical. As a proof of the advantages produced by public competition, we need only refer to the struggle which has recently taken place with regard to the designs for the new Houses of Parliament; the productions having exhibited the talent of the day in a most favourable point of view; and no one can doubt but that many of the architects, whose works now form the exhibition at the National Gallery, will most honourably acquit themselves when called upon, at any future time, to superintend works of the highest class of art.
>
> "Some years since, on a memorable occasion, a report of the House of Commons expressed, in strong terms, an opinion, that no architect could be found in this country capable of carrying a great work into effect: it was well known, at the time, that the charge brought against the profession was most injurious and unwarrantable; and the recent event, when ninety-five men sat down to the consideration of the same subject, has sufficiently disproved these conclusions." (p. xxiv.)

When we consider the number of public buildings, including palaces, prisons, and public offices, which have been bungled by government during the last thirty years, we are almost tempted to exclaim, that any system would be better than the exclusive one above alluded to by Mr. Robinson. But a system of free competition and subsequent examination, similar to what has been stated in our preceding volume to be practised on the Continent, would be of the greatest benefit to architects, to the government, and to the taste of the country. Next follows a list of contributors, with their contributions to the collection, to the library, or to the general funds of the Institute; by which it appears that a very considerable library has already been collected. These articles occupy 38 pages of what may be considered preface.

The communications are arranged under the heads of Construction, Antiquities, and Literature.

CONSTRUCTION.

Art. I. Prize Essay on the Nature and Properties of Concrete, and its Application to Construction up to the present Period. By George Godwin, jun., Associate. Appendix A. Extracts from the Specification for building the new Bridewell, Westminster. Appendix B. Table of the relative Weights of Concrete and different sorts of Stone.

We have already spoken in favour of Mr. Godwin's excellent article (Vol. III. p. 480.). With respect to concrete, three elementary points are to be kept in view; viz. the ultimate object for which concrete is formed; the philosophical principles of its composition; and the practical rules derived from these principles. The object is, to produce a substitute for very large stones; and, consequently, the materials to be employed should be such as will have the mechanical strength of stone, its homogeneousness, its cohesion, and its durability. These conditions can only be fulfilled by employing a combination of small stones of the hardest kind, and conglomerating them into a solid mass by cementitious matter. The principles on which this composition is to be formed are two: first, that the materials be naturally hard and durable; and, secondly, that their union be chemical, and not merely mechanical. The rules to be deduced from these principles will vary, in different parts of the same country, or in different countries, according to the nature of the small stones or gravel, the sand, and the lime, which the given country affords. About London, to form a cubical yard of concrete, it requires about 30 cubic feet of ballast or small stones, chiefly flints, taken out of the bed of the Thames, and containing a quantity of coarse sand; and three fourths of a cubic foot of ground lime: but about Edinburgh, or about Dublin, where what is called Thames ballast is not to be had, where the small stones are in the one case chiefly basalt and granite, and in the other almost entirely limestone; where the limes are of very different qualities from that of Dorking, and where the sand, which is obtained from pits, is small-grained and earthy; the principle which directs that a chemical union shall take place will require different rules for the proportions of the materials. These can only be determined by experiments, which may be made in rectangular wooden boxes; the materials, after being set, being taken out of the box, and tested by penetrating the mass with an iron crowbar, and by fracture. Wherever an architect or a builder does not clearly understand what is meant by chemical union, we would recommend his calling in the aid of a practical chemist. Every one knows what is meant by the setting of Roman cement or stucco; and concrete, when the materials are properly proportioned, ought to set in a manner equally obvious and decided.

The following directions for mixing and applying concrete, having nothing to do with the nature of the composition, are applicable in every country, and may therefore be very appropriately quoted: —

"The methods of mixing and applying concrete are several, having each its advocates and opponents: the one most generally employed, and, as I shall attempt to show, the best, is, thoroughly to mix the lime, previously ground, with the ballast, in a dry state; sufficient water being then thrown over it to effect a perfect mixture, it should be turned over at least twice with shovels — if oftener, so much the better — put into barrows, and wheeled away for use *instantly*. It is generally found advisable to employ two sets of men to perform this operation, say three in each set; one man to be engaged fetching the water, &c., while the other two turn it over to the second set, and they, repeating the process, turn it over to the barrow-men. Sometimes, instead of mixing the materials in a dry state, the ballast is spread out and wetted with water, then covered with the proper proportion of ground lime, and turned over as before.

"After being put into the barrows, it should at once be wheeled up planks, so constructed as to gain a fall of some yards, and thrown into the foundation, which has the mechanical effect of driving the particles closer together, and giving greater solidity to the whole mass. Soon after being thrown in, the mixture is observed to be in commotion, and much heat is evolved; sufficient, indeed, to throw off a large quantity of water in the shape of vapour. This is caused by what is termed the slaking of the lime. When water is thrown upon lime, the two combine, in the proportion of three parts of lime to one of water, and the result is *hydrate* of lime, or, in common parlance, slaked lime. In combining, condensation is effected; the lime and water, together occupying little more space than the lime had before done singly. Now, when the particles of matter composing a body are brought closer together, or the interstices, and these occur in all bodies, are filled up with other matter, as by mechanical compression or chemical combination, it is supposed that its capacity for heat is lessened; for caloric is always evolved, as instanced in the above.

"During this process of slaking, the mixture slightly *expands*, and, by so doing, forces itself together, and still farther assists the consolidation. This effect is one of the advantages derived from the use of ground lime, independently of its being more powerful as a cement than when previously slaked — of this, however, hereafter.

"The concrete, then, being thrown into the trenches, or intended site of building, it is customary with some to keep a man constantly employed in levelling and puddling it, as it is termed: this, if it be done, should follow instantly that the barrow-load be emptied; for if the concrete be first allowed to set, much harm will be done by disturbing it, while the benefit which results in any case from the process is but trifling. For my own part, and it is also the opinion of many practical men, I would not have it in the least disturbed, but allow it to remain precisely in the situation into which it had been thrown from the barrows. As the concrete stratum approaches the surface, this operation may in a degree be necessary, in order to obtain a level face; but whenever it is done, again I would say, let it be done quickly.

"The barrow-load of concrete, in the fall, spreading over the ground, will be found, if continued regularly over the surface, to form a stratum from 7 in. to 10 in. thick, which should be allowed to set before throwing in a second; this, however, if the building be of any size, has usually taken place at the near end by the time that the far one is completed.

"It is advisable always to perfect one stratum before commencing the second; but if this be impracticable, the second stratum, or bed, as it approaches the end of the first, should stop something short of it; the third, in like manner, short of the second, and so to the top, forming steps, as it were, upon which the strata, afterwards to be filled in, may rest."

In the formation of concrete, it has been found that a diminution takes place, after the compound is prepared and set, closely approximating to one fifth of the materials; that is, a cubic yard of concrete, which contains 29 cubic feet, has been found to require 30 cubic feet of ballast, and $3\frac{3}{4}$ cubic feet of ground lime. After the composition has been put together, and while in the act of setting, during the slaking of the lime, an expansion takes place; and of this, Mr. Godwin observes, "an important use has been made in the underpinning of walls.

"The amount of expansion has been found, by experiment, to be about three eighths of an inch in every foot of height; and the size thus gained the concrete never loses; so that if it be placed in the desired situation before *heating*, as it is termed, this property will cause it firmly to wedge up and support the superincumbent mass. All due allowance or preparation should be first made to prevent accident; for, so great is the force with which this expansion takes place, that one who has been long practically engaged in the application of concrete assures me he has seen a wall riven by it."

We strongly recommend this essay to the study of the architect and builder.

Art. II. A Letter from Robert Abraham, Esq., Architect, on the Concrete used at Westminster new Bridewell.

Mr. Abraham presented the Institute with several specimens of concrete made on the ground, some months before the work commenced, in order to ascertain by experiment the proper proportions, mode of throwing in, &c.

"The result of the experiments made during the progress of the work was fully confirmatory of the views originally detailed in contract; which required an admixture of 1 lime to eight ninths gravel, containing sand in the proportion of two ninths of the aggregate; or, in other words, one ninth lime, two ninths sand, sixth ninths gravel. In making a few practical remarks, I beg to state that care and regularity in the execution of the work are of great importance, success very much depending upon the degree of precision and uniformity preserved in proportioning the components; it is therefore necessary that such a system be adopted of depositing the material, on delivery, either in rectangular or other shaped heaps of uniform size, as will render obvious any deficiency of lime or sand, and be an invariable measure for the requisite quantity of water. The mode of throwing in the concrete is also important, very great advantage being obtained from the rapid consolidation arising from pressure, when cast from a height, instead of being laid in steps, or layers. The degree of expansion peculiar to concrete, when thus executed, may be noticed: this takes place immediately after the operation of slaking has occurred, giving an urgent reason for the prompt use of the material after mixing, and showing the necessity of using the lime in a perfectly fresh and pure state. Large landings are raised very perceptibly by this peculiarity, and the crown of a brick arch has been known to fracture from its effect. It must, however, be stated, that this expansion occurs subsequently to an original loss of some magnitude; upon the measure of unmixed material, 27 cubic feet of gravel (with its due proportion of sand included), together with 3 ft. of ground lime, and a little more than four cubic feet of water, yielding only 24 ft. of concrete." (p. 39.)

Art. III. An Account of the Method used in underpinning, with Concrete, the Long Storehouse at His Majesty's Dockyard, Chatham, in the Year 1834. By George L. Taylor, Fellow. With a plate.

By the use of concrete, in this instance, underpinning, which was estimated for at 8,800*l.* in brickwork, was done for considerably less than one half of that sum. The mode of pouring in the concrete, and, when the substructure is nearly completed, of compressing it between frames, acted on by screws, so as to take the bearing of the superstructure, is very ingenious and effective; and is made obvious at the first glance by a clever lithographic sketch.

Art. IV. Description of the Metal Roof at Hungerford Market. By Charles Fowler, Hon. Sec. With two plates.

An exceedingly interesting article, full of sound practical information, and well deserving the study of those who give designs for covered markets.

"The chief peculiarities to be noticed in the construction are, the absence of any tie or lateral abutment; the former being inadmissible, from the want of height; and the latter impracticable, by the detached position, and having no connexion with the colonnades. It must be obvious, that, if the projecting arms beyond the columns were nearly equal to the middle portions of the ribs, which meet and unite in the centre, an equipoise would be produced, and then no tie would be required; but it has been before stated, that the position of the supports was limited, and in such a way as to throw a vast preponderance into the central compartment, producing, of course, a proportionate degree of lateral pressure. To counteract this, an abutment is formed in the centre, by elongating the junction of the two half ribs, principally upwards, by which the pressure is spread over a greater extent of surface, tending towards the top; and this abutment is confined and secured at bottom by a wrought-iron collar, put on when red-hot, so that, in cooling, the contraction tightens and completes the union. The application of this principle of a central abutment being considered novel, it gave rise to much discussion as to its efficacy; accordingly, a series of experiments was made at Messrs. Bramah's (who executed the work) upon models; the result of which was, that this form bore nearly double the weight of a straight bar of the same section. I was induced, by the suggestion of practical men, to increase the substances of the rib beyond what was originally intended; but, from the result of all the tests and experiments, I feel assured that such increase might safely have been spared. Each pair of ribs, forming one span, weighed 33 cwt. 3 qr. 3 lb.; and the whole of the cast-iron work, including columns, gutters, &c., weighed 32 cwt. and 32 lb. Total expense, 706*l.* 7*s.* 11*d.* The area covered was 3960 ft., equal to full 3*s.* 6*d.* per foot, or nearly 18*l.* per square." (p. 45.)

To render this extract perfectly clear, an engraving would, perhaps, be requisite; but, as there will be very few architects who will not become possessed of the book itself, we feel the less regret at not having time to give one in the present Number.

Art. v. On Terrace Roofs. By Charles Fowler, Hon. Sec. With one plate.

Mr. Fowler, some years ago, covered a wing of his house used as an office, and which rises only one story above the ground, in the terrace manner.

It is "approached from the landing of the staircase, and serves as a garden, having a covering of gravel and mould of about 9 in. thick, the weight of which is about 820 lb. to the square yard, independent of the additional load of rain-water, and of persons occasionally going upon it. The whole is supported on cast-iron bearers, or ribs, about 3 ft. apart, having a curved rise of 9 in., which gives form to the terrace, and serves to drain it both ways. The covering is composed of three courses of common plain tiles, bedded in fine cement without sand; and in laying them, laths, or small slips of wood, were used, resting on temporary bearers between the iron ribs, the laths being shifted as the work advanced, in the course of about half an hour after being laid. Particular attention is required to bonding the tiles both ways; and they are rubbed down closely upon each other, much in the same manner as a joiner glues a joint. The gutters are formed by setting up the tiles against the parapets, shaping them into a curve, and giving a slight declivity towards the outlet; and, as there are no joints or drips to be provided for, all this is effected with great ease and compactness. In this case, a bed of coarse gravel was laid underneath the garden mould, that the water might percolate through it, and by which means is avoided the having of any greater quantity of moisture than is compatible with the proper state of the plants. A lath and plaster ceiling is formed underneath, on joists attached to the lower flange of the iron ribs. Some leaks have occurred in this roof, in consequence of unequal settlement in the walls; and, in every instance, they have been effectually stopped, with great ease, by raking out and enlarging the crack, and then running in cement." (p. 48.)

"The roofs of the two taverns on the Hungerford Market were covered by Mr. Fowler in this manner, and have succeeded perfectly. The tiles form a surface agreeable for walking upon, both as to texture, and from being non-conductors of heat, which is another advantage over lead, both as regards the terrace and the rooms underneath; also the friction of so many persons moving about has produced but little wear on the surface of the tiles, although they are more particularly liable to that effect at first, from the irregularity of the surface; but, in situations where it may be important to guard against great friction or wear, the tiles might be rendered harder, and more impervious, by means of a few coats of boiled oil and litharge, laid on during hot weather; or the upper course might be formed of glazed tiles."

Where a covering, or roof only, is required, Mr. Fowler considers two courses of tiles sufficient; but, where the roof is liable to be loaded with persons getting upon it, three courses should be used. With regard to expense, "two courses of tiles on iron joists amounted to one third less than covering with 8 lb. of lead on fir joists." "Independently of the consideration of beauty, for the display of which this mode of construction affords great opportunity, it possesses the powerful recommendations of being incombustible, economical, and durable." (p. 51.)

Art. vi. On Whinstone Construction. By Messrs. Smith of Darnick, N. B. Sewers, Vents, Suspension Bridges, Damp in Foundation Walls, Hollow Walls.

This is an exceedingly instructive article, and most valuable for countries like Wales and the Highlands of Scotland, where bridges are much in demand for crossing the numerous streams which are always found in hilly districts. Arches, of 70 ft. or 80 ft. span, have been built by Messrs. Smith, entirely of whinstone, and only the facing-stones dressed. The stones composing the arch of a bridge over the Ettrick at False Hope, the span of which is 76 ft. 4 in., and the rise about 18 ft., "might average about 2 square feet of area; and many of them required 3 breadths to make up the depth of the arch (viz. 3 ft.); the average thickness of the stones might be 3½ in., but varied in thickness from 1½ in. to 6 in.

"The beds of them being generally so much off the straight, that we never attempted to lay them in any thing like regular courses, one stone would be laid at the side of another three times its thickness; and sometimes there would be as much difference in the same stone, which, in consequence, had to be made up with shivers, to prepare for the bed of the next stone. We were at a good deal of pains in laying the stones as close as possible, and in crossing the bond to make the work firm; but we never attempted to dress the stones straight upon the beds. What we have found most annoying in the building of rubble arches is, the slowness of the setting, or drying, of the mortar, which always causes much delay before the work is sufficiently firm for the striking of the centre; as, until the mortar is able to bear a good deal of resistance, the arch is extremely supple, and easily bent out of its proper curve. Whereas, in the hewn stone arch, the stones being mathematically fitted to one another, its dependence upon the mortar is very little, and it is therefore not easily put out of its proper curve, though the pressure should be unequal; but, in the rubble arch, the balancing must be particularly attended to, or it is sure to go out of its proper curve. The False Hope bridge stood five weeks before the timber was struck, and it kept its curve remarkably well. Were it not for the expense, Roman cement would be the best mortar for large rubble arches; and, in many situations, even this would be far cheaper than hewn stone, as with such a cement almost any kind of stone might be worked into an arch, or even the refuse of a slate quarry might be used in an arch of almost any extent. Most of the failures in the building of arches, which have fallen within our notice, have arisen from not balancing them properly, or from striking the centres too soon." (p. 55.)

Circular Flues. — Messrs. Smith lined all the vents (the Scotch term for flues) at Abbotsford with flues (the Scotch term for tubes) made partly of fine clay, and partly of common clay. "They were made in pieces about 1 ft. in length, circular, and varying from 15 in. to 10 in. diameter, and about 2 in. thick: they were all made a little off the square at one end, to favour the heads in the flues." When the flues were carried along straight, the beveled ends were put together, and the straight ends together; and when a turn was to be formed, the beveled ends were so placed as to form the inclination required. They made excellent flues, and were easily swept. They were executed in 1822, and were the first of the kind used in Scotland. (p. 58.)

Shortly after the publication of Mr. Hiort's book on Circular Flues, a lecture was delivered on them by Dr. Birkbeck, which we attended, and published the following note on the subject in the *Gard. Mag.*, vol. iv. for 1828, p. 160:—"By the use of wedge-shaped sections of cylinders, the circular flue may be built in every possible direction, and so as to form in every case a cylindrical tunnel, which may be freed from soot in the most perfect manner, by machinery, without the aid of climbing boys. In order to have a clear idea how the flue is built, the reader has only to imagine wedge-shaped flooring tiles, with circular holes in them (*fig.* 5.) If a flue, tunnel, or drain under ground is to be built in a straight or perpendicular direction, the thin and the thick edges of the wedges, or tiles, are laid against each other alternately (*fig.* 6. *a*); if the flue or drain is to be turned to one side, the thin edges are laid all on one side (*b*); and if the curve is to be very gentle, or to be serpentine, the thick and the thin edges are used together, or alternately, as may be required to produce the line of direction proposed (*c d e*)."

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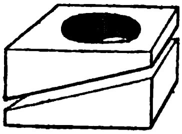

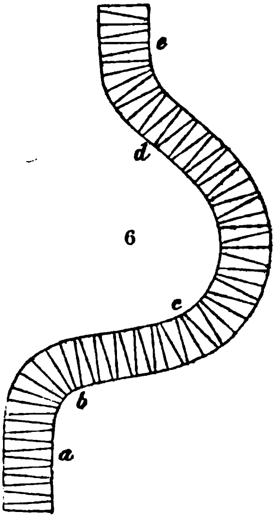

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Damp in Foundations of Walls.—"We have tried a very simple plan in small cottages in damp situations, which we found very effective. We built all the parts of the wall under the surface of the ground quite dry, and did not use any mortar till clear of the earth. This cut off the communication with the damp ground below, and left the walls quite dry above. This plan can only be adopted in small houses, as it would weaken the walls to found them dry in large buildings. We have often thought that it would be a good plan, in building a house upon a clay or tilly foundation, to take out the earth over the whole site of the building, and a few feet beyond the outer walls, to the depth of 1½ ft. or 2 ft. below the intended foundations of the walls, and fill up this space entirely with water gravel, or small stones, which would thus make a kind of artificial subsoil, which, after being firmly beaten, would be ready to receive the foundations of all the walls of the house, which might be formed in the usual way, and would, we think, require nothing more to prevent the rising of the damp. This, in many situations, could only be a very small expense; and we have little doubt, from what we have seen, that it would be effectual, as every wall would be completely drained.

Hollow Walls.—In a wing, which we built at Pavilion, in this neighbourhood, in the year 1811, for Lord Somerville, we built the walls hollow within.

The whole thickness was: 22 in.; 10 in. on each side, with an open space in the heart of 2 in. They had a range of bonds laid between the outer and inner part in every course of 2 ft., which was the height of the boxes used; and the bonds were about the same distance apart. The walls were mostly two stories high, and were all built of common whinstone rubble: they are standing as straight as when they were built; but, as they were all lathed inside, it was not proved whether or not such walls would have done for outer walls without lath." (p. 60.)

The mode of building such walls is detailed in the *Encyclopædia of Cottage Architecture*, p. 640. fig. 1221. and 1222.; the two figures exhibiting a view and section of the gauge-box used for keeping the vacuity of uniform width.

Art. vii. Particulars of some Experiments made by M. J. Brunel, Esq., C. E. and F.R.S., &c. &c., on the Mode of binding Brick Construction. With one plate.

The object of Mr. Brunel may be described as being to produce a beam of brickwork for the purpose of covering wide openings, instead of wooden beams or brick arches. Every carpenter knows that the strength of a beam or a truss resolves itself into two elements, ties and strutts; or the hard part, which resists a crushing force; and the tough part, which resists a drawing or tearing force. Now, in a beam of brickwork alone, the crushing power is amply supplied by the bricks; but there is nothing to furnish tenacity or resistance to the drawing or tearing power, but the adhesion supplied by the mortar or cement. To supply this drawing or tying power, hoop iron was introduced among the brickwork, in pieces of the length of the beam. An elevation is given of this beam, which is 25 ft. in length; and a section, which shows that 12 iron ties were used, each $1\frac{3}{8}$ in. in width, and one sixteenth in thickness.

"The structure was built in October, 1835. The two extremities of it rested upon blockings 12 in. square: the whole mass, consisting of 184 cubic feet, weighed 18,400 lb. The first experiments upon it were begun in December following, hardly two months after its completion. The stress upon the ties was not only that which resulted from the load raised upon it, but that, also, which resulted from its own specific gravity." (p. 62.)

After a variety of experiments by loading this beam with weights, the following conclusion is drawn: —

"It is evident, that, by means of very small substances, operating as ties, or bonds, even the mere fibres of wood, a piece of masonry may be constituted into a substantial mass, or great beam, whereon the superstructures may further be assisted by a few of the same ties with very great advantage; whereas large scantling is found invariably to shrink from its original dimension, and cannot, therefore, efficiently operate as a tie; nor can any bar of iron of 1 in. square, which presents only 4 in. surface, be adequate to sixteen slips, that present a surface of 32 in." (p. 64.)

Art. viii. Description of the Pavilion erected at Edinburgh for the Festival in honour of Earl Grey, Sep. 1834. By Thomas Hamilton, Esq. With a plate.

An instructive article, rendered clear by a plate. Sitting-room was required for 2600 persons, exclusive of room for waiters and other attendants; and this was obtained within a fortnight's notice, in a building 101 ft. square, at a total expense of about 1400*l.* The architect states that, if sufficient time had been allowed, the expense would probably not have been half as much.

ANTIQUITIES.

Under this and the following head of literature, we can only spare room at present to give the titles of the articles.

Art. I. On the Polychromy of Greek Architecture, from the German of Kügler. By W. R. Hamilton, Esq. With a coloured plate. Preliminary Observations; Introduction; Testimonials of Ancient Writers; Remains of Colour in Ancient Monuments; Remains of Colour in the Monuments of Attica; System of Polychromy; List of Writers on the Subject.

Art. II. Account of the Remains of the City of Anni, in Armenia, extracted from the Journal of W. J. Hamilton, Esq.

Art. III. On the newly discovered Crypt at York Minster. By P. F. Robinson, V. P.

LITERATURE.

Art. I. On the Benefits resulting to the Manufactures of a Country from a well-directed Cultivation of Architecture, and of the Art of Design. By J. B. Papworth, V. P.

Art. II. Some Particulars relating to Manuscripts of Vitruvius preserved in various European Libraries. By Thomas Leverton Donaldson, Hon. Sec., Corresponding Member of the Institute of France.

Art. III. W. Murray, Esq., Architect, Dublin. Some Particulars relative to the District Lunatic Asylums established in Ireland under the Commissioners for general Control.

Art. IV. A folded Plate of the Autograph Signatures of the Honorary and Corresponding Members of the Institute.

Art. II. *Transactions of the Institution of Civil Engineers.* 4to. Vol. I. London, John Weale, 57. High Holborn.

This is an admirable work, containing a large mass of original and practical information, accompanied, in many cases, by scientific explanations. We observe by the list of subscribers that it contains the names of almost as many architects as engineers; which we are exceedingly glad to see, because no architect is worthy of public confidence who has not a thorough knowledge of the principal problems, mechanical, hydrostatical, and chemical, on which the science of engineering depends. For this reason, we have no doubt that, in due time, no person will be authorised to practice, either as an architect or an engineer, who has not been examined by some public college or institution; in the same way as medical men now are by the College of Surgeons. But more of this on some future occasion.

The volume before us commences with an introduction, in which a general view is taken of engineering, and those who practised that art, from the time of Louis XIV., until the granting of the charter of the Institution of Civil Engineers, in 1828. This introduction is most judiciously written; and we are pleased to find in it evidence of that masterly character of mind which measures the importance of every art, relatively to society, by its influence on human civilisation generally. There cannot be a finer subject for reflection, than the influence of civil engineering on the face of nature and the progress of society; and, perhaps, there is no profession in the world so well adapted for expanding the mind as that of civil engineering; and, certainly, no art but that of printing is so powerfully calculated to promote the cause of society. A man may excel in any of the fine arts without ever looking beyond them; and the same thing may be said with regard to proficiency in most of the useful arts, from agriculture upwards. A man may be a great warrior, and only think of conquering mankind by force of arms; a great divine, and only think of converting them to his particular creed: but it is difficult to conceive a man, like Telford, uniting all parts of the country by means of improved roads; or, like Fulton, projecting canals for the whole of North America; without having his mind impressed with the ultimate effect of such improvements, in raising and equalising the enjoyments of the human race.

We have received this work too late in the month to read more than the introduction, and glance at the table of contents and the plates; but we have seen quite enough to enable us to recommend it with the greatest confidence to both engineers and architects. We shall hereafter have a remark or two to make on the taste of some of the designs, particularly the bridges.

ART. III. *An Essay on the Nature, the End, and the Means of Imitation in the Fine Arts. Translated from the French of M. Quatremere de Quincy.* By J. C. Kent. London; Smith, Elder, and Co., Cornhill.

THIS work, which has been translated by Mr. Kent at our request, contains what appears to us by far the most satisfactory theory of the fine arts that has ever been published. The author, M. Quatremère de Quincy, is well known to architects by his *Architectural Dictionary*, by far the most philosophical work of the kind that we know of. The *Essay on Imitation* we have repeatedly recommended in this Magazine, and more especially in the *Gardener's Magazine;* and we cannot better introduce it here, than by the following extract from the translator's preface: —

> "A want, acknowledged by every one, is here supplied. An all-comprehensive and universal theory is now, for the first time, unfolded, as a sure guide and instructor where to find the secrets of, and how best to wield, the spells of art in moulding its creations; and a standard of true taste and right criticism is set up to try those creations, and to unlock whatever art has, in its works, of most noble, pure, and elevating. The original of this small volume, the result of years of thought, was published at Paris in the year 1823, but appears to have hitherto remained almost unknown on this side the Channel."

The best thanks of the public are due to Mr. Kent for having removed the chief obstacle to the dissemination of the work in this country; and we feel satisfied that the fruits which it will produce, by the improvement of the public taste, will afford him a heartfelt satisfaction for the task which he has undertaken. Well may he say of the Essay, that he "feels proud of being the channel through which it reaches the British public." (Preface, p. xi.)

To attempt at giving any analysis of the work in this Magazine is out of the question. The work could not be abridged so as to be properly understood; and, indeed, it will not be understood by any one who has not a metaphysical turn of mind, and who will not apply himself to it with the utmost attention. We consider ourselves singularly fortunate in having procured a copy of the original work, as soon as it was to be obtained in this country; because it will enable us to lay down a theory of landscape-gardening founded on principles which will endure in all time; a task that has never yet been attempted, the writers on this art having hitherto been chiefly occupied with one particular style.

We conclude by recommending the *Essay on Imitation* to every architect who has any pretensions to being a thinking man, and to every man of taste who has a library.

ART. IV. *Literary Notices.*

THE Domestic Vitruvius, by P. F. Robinson, Esq., containing numerous designs of mansions erected under Mr. Robinson's superintendence, is in a forward state.

A Letter to Lord Viscount Duncannon on the new Houses of Parliament, containing plans, and a perspective view of Mr. Hopper's design, is nearly ready.

Specifications for Practical Architecture, in one vol. 8vo, by Alfred Bartholemew, Architect, is in the press, and very nearly ady.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Professional Precedents.*

Under this head we mean to place models and precedents, for specifications, descriptions, estimates, reports, suggestions, data, desiderata, &c., as may be kindly furnished to us by contributors; reserving to ourselves the power of selection.

Churches and Chapels. — Suggestions from the Incorporated Society for promoting the Enlargement, Building, and Repairing of Churches and Chapels; for the consideration of persons engaged in such undertakings.

Site. Central, but with regard to population rather than space; dry; rather elevated, but not on a high or steep hill; not near nuisances, such as steam-engines, shafts of mines, noisy trades, or offensive manufactories; accessible by foot and carriage-ways, but not to be so near to principal thoroughfares, as to subject the service of the church to the danger of being incommoded by noise.

Foundation. Adequate to the height and size of the structure; to be surrounded, if requisite, by good covered drains; no graves within the walls, unless they are vaulted, nor any graves or access to the vaults within 20 ft. of the outside; foundation to be at least 1 ft. lower than any grave near it; and, if the soil wants firmness, the walls may often be better secured from partial settlements by spreading the footing on each side, than by deepening the foundation, or resorting to more expensive works.

Area. It is suggested, that it would tend much to the preservation of churches, and render them more dry, if a paved open area, not less than 18 in. wide, was made round them, and sunk 6 in. or 8 in. below the level of the floor of the church, with a drain from the area to carry off the water: this observation is applicable to old churches as well as new ones.

Basement. Some churches and chapels are rendered cheaper, drier, and more commodious, by good vaults under them, for coals for the use of the poor, fire-engines, or the like, and for stoves for warming the interior; others, by apartments for clerk, sexton, &c. The distance between the joists of the ground floor should never exceed 12 in.

Walls. Thickness to be well proportioned to height and incumbent weight, &c. Durability to be regarded more than beauty, and not to be less than 24 ft. high, when galleries are to be erected, which should always have horizontal ties from the pillars to the walls.

When cased with stone, the wall ought to be thicker than is requisite if of brick only, because the stone, although it adds to the beauty, increases the weight without proportionally increasing the strength, as the two materials do not settle equally together.

Roof. Strength and durability to be most regarded. No roof to be constructed without tie-beams, otherwise the rafters, not being confined at the feet, have a tendency to spread and thrust out the walls.

If the expense of lead, which is most durable, cannot be afforded, the next best covering is slate.

Slates to be laid upon battens rather than boards, and to be rendered inside; boards being liable to rot for want of air.

Gutters. To be most carefully constructed to carry off the rain and snow into the perpendicular pipes, which are cheapest and best of cast iron, cylindrical, and placed 1 in. or 2 in. at least from the wall, so as to admit air and keep it dry.

Dripping eaves, projecting very far, should not supersede the necessity of gutters and pipes, even in very sheltered situations; but in exposed places, eaves, gutters, and rain-water pipes will be absolutely necessary, to prevent the wet being driven against the walls, and thus rendering the building damp.

Gutters may be made of cast iron; but, unless skilfully cast, they will not preserve their level.

Outlets should be provided in parapets to carry off the overflowing occasioned by rapid thaws or otherwise, and also waste pipes in the cistern heads of the rain-water pipes.

The drains on the roof should be protected by coverings, as it prevents the melting snow from congealing in the gutter, and thus obstructing the water-course.

Easy access to the gutters should be provided by dormer-doors and boarded gangways within the roof, for the convenience of cleansing them in times of snow, or whenever necessary.

Chimneys. If any, the utmost care should be taken to render them safe from fire. They may be concealed in pinnacles.

Tower. The vestibule and staircase may be placed in the tower, so as to leave the whole church available for sittings.

Floor. To sittings, wood or brick; to gangways, brick or stone; if not undervaulted, it may be freed from damp by brick rubble, flints or ashes, or furnace slack, laid to the depth of 12 in. or 18 in. under the floor. Allowance should also be made for the future rise of the surrounding burying-ground; the floors of many churches, originally above ground, being at this day many feet below the surface, and thereby become damp and unwholesome.

Windows. Ought not to resemble modern sashes; but, whether Grecian or Gothic, the glass should be in small panes, and not costly; not opening like casements, but falling inwards and downwards from near the top, or outwards from the top, or hung on horizontal pivots.

Where lead-lights are adopted, copper bands to tie them to the saddle-bars are preferable to lead, being less liable to stretch and become loose by the action of the wind.

The very unsightly appearance often occasioned by the wet streaming down the window-backs, may be prevented by fixing a small copper gutter at the bottom of each lead-light, to receive the moisture produced by condensation, with copper tubes to convey the same to the outside of the building. This has also a tendency to keep the building dry, and to preserve it from decay.

Ventilation. Cannot be completely effected by windows alone, without incommoding the congregation. Fresh air may be introduced from without, and conveyed through pipes carried under the floor into the body of the church, at convenient apertures; and the foul air may be expelled at or near the roof, either by horizontal or perpendicular channels or tubes. The horizontal are used in the best barrack infirmaries.

Apertures in the ceiling may also be made to open and close by means of luffer-boards.

All ventilation provided in the original construction of the building to be carefully preserved and kept open.

All doors to be opened for one hour before service and one hour after, except the winter evening service, and also except where warm air is used during the time of its being used in winter.

All windows, casements, &c., to be set open for some hours every fine day, both in winter and summer.

Warmth. Is best provided by introducing warm air through the floor from chambers of air placed in the vaults under it, which are heated by means of stoves or furnaces, and the heat, whether from a stove or otherwise, ought to be introduced near the door, whereby the heat will be carried into the church by the draft from the door.

Voice. Echo and circulation of sound to be avoided, therefore stucco on batten, domes and coved ceilings (except of the waggon form), to be avoided; so also circular walls, except only at the back of the preacher and reader. Ceilings of wood preferable to plaster: all woodwork is favourable to the voice.

Accommodation, internal. The most favourable position for the minister is near an end wall, or in a semicircular recess under a half dome. The congregation should all see as well as hear him; therefore no square, or round, or double pews should be allowed, and as few pews as may be. The rest of the seats, open benches with backs. A narrow shelf fixed behind the back-rail will serve at once to strengthen it and to support the prayer-book; under the shelf may be placed pegs, or other conveniences for great coats and cloaks, sticks and umbrellas; about half-way under the seats may be fixed a shelf for receiving hats. Kneeling-boards should in all cases be provided.

Seats. The seats should all be placed so as to face the preacher, as far as possible. Pillars of cast iron to support a gallery will give least obstruction to sight and hearing, and are not unfit for chapels, though in large churches they may want grandeur.

Gallery. With a view of wasting as little space as possible, the gallery may be fitted up with benches and back-railings for children and others entitled to the use of free seats. Other free seats may be placed under the galleries; and the eastern end of them, if they lie nearest the pulpit or reading-desk, may afford the best accommodation to the aged and infirm, and the middle of the area may be filled with pews for such as are able to pay rents. In adapting the front seat of a gallery to the use of children, it is advantageous to carry the front wainscot but little higher than the knee, and to surmount it with an open railing, which may be made of cast iron, through which the children may be seen whilst kneeling and sitting. Where the pulpit is placed at the west end, the benches, whether pewed or not, ought to run from E. to W. so that no part of the congregation may turn their backs upon the altar. The pulpit, also, should be placed so as to intercept the view of it as little as possible.

Dimensions, internal. When the congregation is mixed of children and adults, from 17 in. to 20 in. by from 28 in. to 35 in., may be allowed for each sitting, and from 4 to 5 square feet on the floor not too much for every individual, allowing for gangways, communion table, &c. Hence a floor, to accommodate from 1000 to 1200 persons, should contain from 5500 to 6500 square feet, and so in proportion. An average of less than 18 in. by 30 in. has been found insufficient for the accommodation of each person.

Form. The most approved forms are a parallelogram and an octagon; but a polygon or a semi-polygon, or a figure of three straight sides and one polygonal, would bring a large congregation nearer to the preacher than any other, except a circle, which is objectionable, as confounding articulate sounds.

Ornament, internal. Neat, simple, never gaudy or trifling. Woollen linings and cushions are apt to harbour dust, damp, and vermin. Wood is most easily kept clean and dry; yet movable cushions, if wanted, may be allowed.

Ornament, external. Pure and simple, yet venerable, and having the character of a church or chapel: none preferable to the simplest Gothic. The Grecian Doric is also eligible.

Materials. For walls, stone preferable, laid as in the quarry, in large blocks, and all well grouted or doweled; and if brick, the lowest course to be laid dry, and the rest in cement, to the second or third course above ground; or lay a horizontal course of slate in cement quite through the wall, just above the level of the outer ground, in order to prevent the rising of the damp up the wall. For the beams and other timber, iron may often be substituted: but it requires to be carefully examined, for a flaw in the casting has already been the cause of tremendous and most expensive accidents: and wherever the ends of timbers are lodged in the walls, they will be liable to rot, by imbibing the damp, unless they are exposed to a circulation of air.

Vestry. It is most convenient when placed near the reading-desk or pulpit.

Finishings. Wall wainscoting, or wood linings to walls, to be avoided wherever convenient. Wood linings to walls confine the damp, and frequently occasion dry rot. For the same reason, cement skirtings are to be preferred to wood, particularly on the ground floor. Where the linings to the walls are of wood, holes should be perforated under the seats to allow the circulation of air.

ART. II. *Institute of British Architects.*

November 22. 1836. — The Institute of British Architects have, during the last month, held several meetings for the transaction of various important matters connected with the internal management of their affairs, and for the purpose of rendering still more effective their exertions for the promotion of their art. Sir Jeffry Wyatville and Sir Robert Smirke have, with their concurrence, been nominated as Honorary Fellows by contribution, and have been unanimously elected. These gentlemen, with Sir John Soane, and C. R. Cockerell, Esq., make four Academicians who have joined the ranks of their professional brethren for the purpose of furthering the objects of science. Professor Sprenger of Vienna, and Alexander Bruloff of Petersburg, Architect of the Archduke Michael's Palace, have been added to the list of Honorary and Corresponding Members. Mr. William Deane Butler of Dublin has been proposed as Fellow, and Mr. William Richardson of York as Associate.

Institute of British Architects, King Street, Covent Garden. — Session 1836–37. Ordinary Meetings. Chair to be taken at eight o'clock on the following Monday evenings: — December 5. 19.; January 16. 30.; February 13. 27.; March 13.; April 3. 17.; May *1. 15. 29.; June 12. 26.; July 10. 24.

December 5. 1836. — J. B. Papworth, Esq., V. P., in the chair.

Elected. Wm. Deane Butler, Architect, of Dublin, as Fellow.

Presented. The Duke of Serradifaco's work on Sicilian Antiquities, two copies. Description of the House and Museum, the residence of Sir J. Soane; Walker's Vicar's Close at Wells. A Print, being a fac-simile of an old drawing on parchment, by R. Ryte, of the time of Henry VIII. Essay on Imitation in the Fine Arts, by J. C. Kent. Plan and View of a Design for a Group of Villas to be erected at Bowchurch, Isle of Wight. A Print of a View of the proposed Docks, Ca Island, Essex. Portion of a tiled floor from St. James's Palace. Part of a lintel taken out of the Chapel at Whitehall; and printed memorandum of Lectures by Sir J. Soane, delivered at the Royal Academy, in 1835; also of the presentation of the Soane Medal.

Read. A letter from F. Catherwood, Honorary Member at New York, descriptive of the method of removing houses, as practised in that city. A paper by P. F. Robinson, V. P., on Oblique Arches over and under Railways, Viaducts, and Canals; illustrated by diagrams. An Account of some Experiments made on Specimens of Wood, by the late Thomas Tredgold, communicated by B. White, Esq. A description of Baillie's Patent Metallic Hopper Light, explained with models; and also Cowell's invention to facilitate the removal of Sashes from frames for the purpose of cleaning, &c., with a model.

A letter was read from W. R. Hamilton, Esq., stating that, finding that Sarti was about to make casts of most of the Elgin Marbles, he thought that this would increase the difficulty of ascertaining the existence, or not, of any remains of colour upon these monuments; and he had therefore addressed an urgent recommendation to the trustees, that they should have them previously inspected by two sculptors, two chymists, and two painters, who should be solicited to examine officially, and report officially. The trustees, however, declined doing more than to permit the marbles to be inspected, and the secretary communicated that the council of the Institute had appointed a committee to undertake this examination, consisting of the following gentlemen: — Messrs. Angell, Donaldson, Scoles, C. R. Cockerell, R.A., and Dr. W. Faraday; that Messrs. Hamilton and R. Westmacott, R.A., be requested to cooperate with the committee in their investigations; and that the committee do report the result of their examination.

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* Annual general meeting of members only. Chair taken at three o'clock P. M. punctually.

THE

ARCHITECTURAL MAGAZINE.

FEBRUARY, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *On the Cultivation of the Fine Arts in Germany.* By John Woolley.

(*Read at a Meeting of the Architectural Society, December* 22. 1836.)

I believe that at this moment there is no country in Europe so justly celebrated for its successful cultivation of the fine arts as Germany. But, while the daily increasing literary intercourse between England and that country is more and more productive of mutually augmented esteem and improvement, and the works of the poet, the philosopher, and the historian are reciprocally understood and appreciated in either country, it must be acknowledged that the painter, the sculptor, and the architect are comparatively strangers to each other's merit.

This disproportionate interchange of ideas on matters of art arises partly, I am aware, from the nature of the works themselves; for, while the genius of Shakspeare shines as brightly on the cultivated mind in the remotest corner of the globe as on the banks of the Avon, and while the fame of Wieland and Göthe extends to countries where the very name of Weimar is unknown, the creations of the painter, the sculptor, but especially of the architect, to be appreciated, must be visited, and viewed in the place of their birth. Their subtle excellences evaporate in the copy, and still more in the description. In this important distinction between the works of literature and art, I am aware, consists the chief cause of their unequal dissemination: but still I think that prejudice has some share in adding to the evil.

Little is comparatively known, save the mere mention of their names in books of tourists, of the magnificent fresco paintings with which Häss, Cornelius, Schnorr have adorned the public buildings and palaces of Germany. Little is known of the German disciples of Lysippus, though Tieck, Rauch, Schwanthahr, Mayer well deserve the title; and I think the very names of Schinkel and Klenze may be unknown to many who pronounce all modern architecture, without exception, to be "wretched and disgraceful."

I must here entreat your indulgence for what, I am sensible, will be rather a digression; but *modern* architecture, in the strictest sense of the word, forming the subject of my remarks, I feel that I cannot proceed to illustrate my ideas of its merits from the modern buildings of the Germans, until I have said a few words on the aspersions recently cast upon those of our own countrymen.

There is not, indeed, a more favourite subject for the exercise of satire and abuse than modern architecture. We read of the "wretched state of architecture at the present day:" in fact, this is the title of a chapter in a book written entirely to prove, or I should rather say to assert, the truth of this sweeping anathema. We are told "of such public monuments as Buckingham Palace, the new National Gallery, the new buildings of the British Museum, the Board of Trade, and of all the principal edifices lately erected, that their very existence is a national disgrace," and that a just sense of these various degradations, and a wish to advance the cause of truth over error, call for these candid remarks.

For the success of this laudable and difficult project, something beyond mere vague assertions must be advanced. That they are bold, unqualified, and without respect to persons, is the only merit of these assertions, since they are utterly unsupported by any form of argument. We are not told why any of these monuments, thus held up to derision, are "a national disgrace;" nor is there any reason assigned, unless it is that they are not Gothic monuments, and are guilty of not having been built during "the glorious middle ages." The only means which the author takes to "advance the cause of truth over error," is by means of "contrasts," where contrast cannot possibly exist; namely, between Gothic and Grecian architecture. By this I by no means intend to depreciate Gothic architecture; and even the trite remark, that between styles so utterly dissimilar no comparison can be drawn, though one may be preferred to the other, I should have thought impertinent, but for Mr. Pugin's contrasts. Gothic has been aptly styled a distinct language; the Italian, but a dialect of the Grecian, and, as such, certainly inferior to the original tongue. Now, since contrast is to be the test of modern merit, let it be where contrast may be fairly instituted; and, since it will be something gained to show that we have improved a little upon the works which immediately preceded us, let us take a specimen of the taste of the last two centuries, composed of broken entablatures and pediments, frightful balustrades and attics, bulging wooden-looking pillars raised upon high plinths, and monstrous broken-backed scrolls rising in huge contortions the whole height of an entire Lilliputian order. These would not contain more of caricature than Mr. Pugin's contrasts: such things existed, and do exist: they were the faults, it has been said, more of the age, unenlightened by a Stuart, than of the architect. But, whether misfortune or faults, they were admired and executed in the days of the Joneses, the Adams, the Kents, and Burlingtons; and now, since we must needs enter into invidious comparisons in self-defence, who, I would ask, can place such a jumble of disproportions by the side of any of the before-mentioned modern "monuments of national disgrace," and not feel convinced that we have more reason to indulge in congratulation on the improvement that has taken place, than in complaints of the degeneracy of modern architecture.

To the arguments of those who, after allowing the merit of Grecian art, exclaim, "But are we for ever condemned to imitate, and never to create; doomed for ever to the servile repetition of the same ideas and forms on which the sun has looked for the last two thousand years?" to these outcries for deliverance from the Greeks and Romans, which have been so often and so ably answered, I will only add the testimony of Klenze in the Vorwort to his remarks on the Glyptothek at Munich:—"In the proper and extended sense of the word, architecture embraces two principal epochs in its ultimate formation; namely, that in which *horizontal* coverings to openings and apertures only were known, and that which arose upon the invention and application of the arch. When we investigate and unite the principles of this twofold consummation of Grecian architecture; and while, in our modern practice, we ever keep in view the precious monuments of antiquity which remain to us both in Greece and in Rome (im eigentlichen Griechenland und in den römischen Staaten); Grecian architecture must be the architecture of the world and of all time; and there is no material, no diversity of usages, no climate, which can set limits to its application."

To prove that creative genius and originality may exist in strict conformity with this devotion to the remains of antiquity, and that their worship can never become "a creed outworn," I would wish for no better examples than those to be found in the architecture of Prussia and Bavaria, and that, too, in edifices erected since the commencement of the present century.

The Brandenburg Gate, erected in Berlin by Gotthard Langhane in 1789, was one of the first symptoms of the German reformation from bad French and Italian taste, and return to the models of Greece; since it is a *free* imitation of the Propylea at Athens; that is to say, it has no pediment, and the entablature is surmounted by an attic, upon which stands a quadriga with a figure of Victory bearing aloft the Prussian eagle. During the French invasion, this car was torn down, and sent, among other works of art, to Paris. The Prussians have now regained their goddess, together with the right to place her once more in triumph over this fine entrance to their city. On account of these associations, added to its own merits; and, although by no means faultless, it certainly possesses many; the Brandenburg Gate may justify the boast of the Prussians, that it is the finest entrance to the finest city and street (the Unter den Linden) in Germany.

To Schinkel, then, Berlin is chiefly indebted for its architectural fame, from the numerous public and private buildings with which he has had the good fortune to adorn it, "in a spirit worthy of Greece itself." Though his forte is Grecian architecture, he has not confined his studies to that style, nor, indeed, to architecture alone; since he has displayed first-rate talent, both in painting and sculpture. Some of his designs for vases, fountains, &c., have been published by the Technischer Deputation of Berlin; the paintings which ornament the theatres of Hamburg and Berlin are from his own designs; and he painted the cartoons for the frescoes which are intended to adorn the external walls of his new museum. They are appropriate to the building for which they are designed, being illustrative of the dawn and progress of art. There has been some delay in the completion of this portion of the decoration of his building; and though, as Schinkel expresses it, "Sie sind bis jetzt nur Wünsche des Architecten" (they exist, hitherto, but in the wishes of the architect), they will, no doubt, be eventually executed. I have been told by artists who saw these cartoons when exhibited in Schinkel's house in Berlin, that they were not to be surpassed for poetic imagination.

I may here mention that a school of fresco painting has been established at Munich, under the direction of Cornelius, Schnorr and others; and the perfection to which it has been carried there, both in internal and external decoration, has awakened repeated regret, in all who have beheld this beautiful union of painting and architecture, that it is not cultivated in England. Mrs. Jameson's enthusiastic and eloquent remark upon the subject is well worthy of quotation:—"Often have I walked up and down these superb rooms, looking up at Schnorr and his assistants, watching the progress of the fresco paintings with which this palace is being adorned (the new palace at Munich, designed by L. von Klenze); and often have I thought, What would Etty, Briggs, Hilton, or Martin,—oh, what would they give, to have two or three hundred feet of space before them, to cover at will, with glorious creations like these, scenes from Chaucer, Spenser, Shakspeare, or Milton! proudly conscious they were painting for posterity. Alas, how different! with us, such men as Etty and Hilton illustrate annuals; and the genius of Turner shrinks into a vignette."

The study of the works of Schinkel impress the mind at once with the feeling that they are the offspring of genius which is not confined to one branch of art; that they have been conceived under the conviction that the poet, the painter, and the sculptor must be united in the architect who aspires to be something beyond a mere builder. The words remind me of a remark of the professor of anatomy in his late elegant introductory lecture at the Royal Academy, when expatiating on the varied attainments necessary to constitute preeminence in works which demand creative imagination and genius: — "We frequently hear talk," said he, "of a mere mathematician, of a mere engineer, of a mere anatomist: but a mere poet, a mere historical painter, a mere sculptor, are words without meaning, or mean only no poet, no painter, no sculptor all." A mere architect is, I am sure, quite as much a contradiction in terms, and might have been added to the list with at least equal justice: but Mr. Green forgot that architecture was one of the fine arts; and at the Royal Academy this is, unhappily, more matter of regret than surprise.

I shall now offer a few remarks on the Königlichen Schauspielhaus, the new Royal Theatre at Berlin, as figured in Schinkel's *Sammlung Architectonischer Entwürfe*, and described in his accompanying notes; which building has been unfortunate enough to incur the criticism of several recent tourists. One remarks that it has not entered into the head of any other architect in the world, to place two pediments, one over the other, in the same building; that the body and wings are disfigured by two rows of thin tapering windows, &c.; and compares the pedimented attic to a paper manufactory. Another says that the Ionic portico is in itself a fine object; but that it is difficult to conceive how the architect who reared it could have crowded into the body of the edifice every fault which such a building can possess; that the second pediment offends the eye mortally; and that, in a building where no daylight is required, the edifice is slit in every direction by narrow insignificant windows, &c. In reply to this, I cannot do better than translate Schinkel's own remarks upon the peculiarities of the building. He says, "To pronounce judgment upon fair grounds on the merits of a building of considerable extent, a knowledge of the conditions and limitations which moulded its interior and exterior forms and arrangements is indispensably necessary. For the designs of the new theatre, I consider the statement of these restrictions especially necessary; since restrictions so numerous and so complicated have seldom been united together in one building. Many persons, with imperfect and limited perception, believe themselves able to improve portions of the entire work; while ignorance of the difficulty of bringing the multitudinous and opposing portions into connexion with each other makes them blind to the fatal effects which these partial improvements would have upon the harmony of the whole."

He then goes on to state the dimensions supplied him by the streets running into the platz, or square, in which the theatre is built; and the restrictions which his plan was limited to by the peristyles of the two churches occupying each end of the square which will be seen on reference to the plan, and before which the peristyle of the theatre dared not advance. He states that he was obliged to use a very considerable portion of the walls of the old theatre which remained standing after the fire; and enumerates other particulars and limitations, unknown and unenquired into by those who pronounce the edifice to be a very doubtful specimen of national genius; but in which, however, the principal features of the theatre had their birth, and in which consisted the difficulty of adapting an architectural whole appropriate to its own destination, and, at the same time in harmony with the other buildings of the surrounding platz.

The building consists of three principal divisions: that appropriated to the theatre itself; the second, for its necessary offices and apartments; and the third, a splendid saloon, with anterooms, &c., for concerts and musical exhibitions. Here daylight was essentially necessary; so that one third of the principal façade required to be slit into windows. The theatre itself, of course, demanded the first consideration; and it therefore occupies the centre, as the most conspicuous part of the edifice; and for this reason, and to give the required height, it is carried up above the rest of the building, and has its own pediment and peristyle towards the square. Thus the edifice consists of three separate buildings under one roof; and the danger of fire, which destroyed its predecessor, is considerably diminished.

In describing the style of architecture, Schinkel says: "In general, as far as the peculiar limitations of the building would allow, I have endeavoured to follow the Grecian form and construction. All arches and curved lines have been therefore strictly avoided in the exterior, and likewise in the interior of the principal rooms, and the construction of horizontal architraves attended to throughout. The construction of the pilasters, like those of the edifices of Greece (those of Thrasyllus at Athens, for example), appeared to me to be more in harmony with the peristyle of the façade, and to correspond more with the character of a public building, than the usual fashion of windows; while, at the same time, I obtained more light for the interior, otherwise a difficulty in a building of such depth."

The decoration consists of rich architectural members and sculpture. That in the lower pediment represents the history of Niobe, admirably designed and executed by Christian Tieck, professor of sculpture, and brother of Ludwig Tieck of Munich, the first living poet and writer of Germany. The figures at the apex and extremities of the pediment represent the muses Polyhymnia, Melpomene, and Thalia.

The new Museum at Berlin, another of the buildings figured in Schinkel's work, is situated in the finest part of the city, in the midst of a constellation of magnificent buildings. It consists of a basement, a principal floor, and a suite of corresponding apartments above. The lower story is for the reception of sculpture, the one above for painting, and the basement contains the necessary offices and apartments. The principal front consists of an open colonnade of eighteen Ionic columns, and two antæ; under which monuments to modern men of genius are intended to be placed in security from the weather. The basement story in this elevation forms a solid stylobate, on which the columns rest, broken only in the centre by the grand steps, which occupy the width of seven intercolumniations. Four columns in antis occupy the centre within the portico; and the entrance is by the five consequent intercolumniations leading to the doorway of the rotunda on the ground story, and to the external staircase, seen between the columns, leading to the gallery of the rotunda and one-pair story. The receding wall, behind the columns, is enriched throughout the lower portion with compartments inlaid with variegated marbles and bas-reliefs; and the upper portion is to be adorned with the fresco paintings relating to the destination of the building, which I mentioned before as being not yet executed. These decorations, seen between the columns, are intended to give the whole a light appearance; and, from the effect of what is already completed, it will eminently answer the purpose. The statues on each side of the steps are not yet put up: they are those of the munificent founder of the institution and his successor. "As to the style of architecture," says Schinkel, "which pervades the exterior as well as the interior of the building, simplicity has been my chief object. The extensiveness of the area on which the building stands, the immediate vicinity of the royal palace, the sumptuous zeughaus (arsenal), &c., demanded vastness of proportion; for which reason, instead of indicating the two principal floors by two distinct one over the other standing orders, I have preferred carrying up one single order, constituting the lofty colonnade. This colonnade refers, in the architectural connexion of the whole (im architectonischer Zusammenhange des Ganzen), to the grand centre formed by the rotunda, which takes in the height of more than both floors, and, therefore, is proportioned to this central portion of the building. The same Ionic entablature and substructure is carried all round the building; the four angles are adorned with the pilasters of the order; and thus a simple and vast feature is produced, to which the interior division into two floors is entirely subordinate. The quadrangular superstructure for the concealment of the dome, raised upon the principal mass of the building, presents a marked centre; and it was therefore necessary that it should possess significant decoration. The figures at the angles of this principal front represent Dioscuri with their horses, and the golden stars on their foreheads, known to us in the mythology as beings of protection and prosperity, and, therefore, appropriate to an edifice which can flourish only under such auspices. The museum was opened at the latter end of the year 1828. In front of the grand steps stands a colossal red granite vase, and in the centre of the extensive area in front of the museum, planted with trees, and formed by the Dom Kirche, the royal palace, and the Spree, is a fountain of water constantly playing."

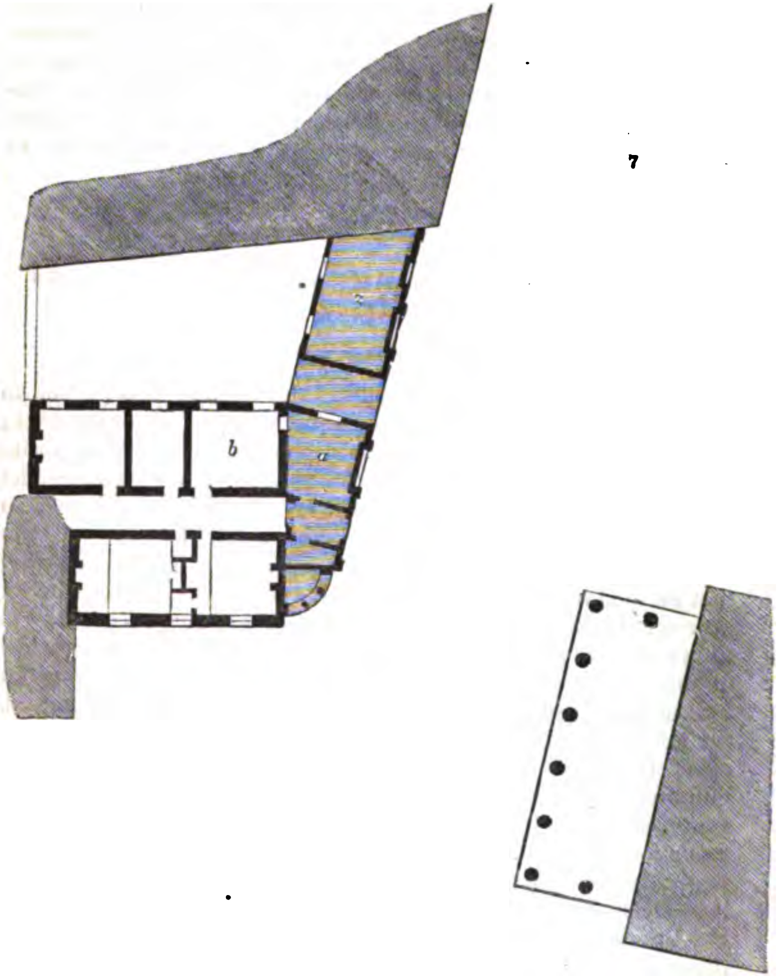
The third modern German building that I shall notice is the Wacht Gebäude, appropriated to the king's chief guard, which is figured and described in the same work. The plan of the building, which is entirely isolated, is nearly that of the ancient Roman castrum; and the four massive corner towers and the interior court, are the results of the same imitation. The latter (the interior court) serves for the admission of light by windows, and other arrangements, which would otherwise be visible from the open area which surrounds the building on all sides. The material is Saxon sandstone. The sculpture in the pediment represents a battle. A female figure of Victory in the centre decides in favour of the heroes of the just cause; who are Prussians by the eagle on their shields. On her left are represented the rallying to battle, final struggles, spoliation, and domestic grief, which await her fatal decree; while on the right are wailings over a fallen hero. In the frieze, the place of triglyphs is supplied by supporting Victories, displaying wreaths and crowns as rewards for the brave. The two marble statues on either side are those of Generals Bülow and Scharnhorst, by Christian Rauch of Berlin, professor of sculpture in the Academy of Arts; and these two statues alone, not to mention his other exquisite works, are of merit to entitle him to the very first rank among living artists. The whole appearance of the Haupt Wache is simple and majestic, and worthy of the hero to whom we owe no small portion of the glory of 1815.

I cannot close this very imperfect notice of Schinkel with a more just tribute to his merit than that paid to him in the last number of the *Foreign Quarterly Review*:—" If any one has conceived his subjects in the true spirit of Grecian architecture, designing as its best masters would have done had they lived in our times, and been called upon to apply their art to other purposes and exigencies than those they had to provide for, it is Schinkel. Nor can a more satisfactory testimony be borne to his taste and ability, than that of Schaubert, who, after returning to Berlin from Athens, where he had been contemplating the majesty of the Parthenon and the finished grace of the Erectheon, pronounced the façade of the museum at Berlin to be superior to any other architectural production in all Europe."

ART. II. *A Critical View of the National Gallery.* By AN AMATEUR.

(*Continued from* p. 28.)

INSTEAD of making the east end of the Gallery stand askew to the portico of St. Martin's Church (as if it were shrinking back, and almost wheeling round from that disagreeable opposite neighbour), it would surely have been better to carry it parallel to the other building, and extend it as far as the workhouse, so as to accomplish two great desiderata; viz. the shutting the latter and the back of the Gallery itself out of sight, and giving that architectural importance to this end of the edifice which it now stands greatly in need of. Besides this, the irregularity in the position of the Gallery with regard to the church and the line of the street, which, as it is now, produces an effect very far indeed from agreeable, would have been obviated. If, indeed, the advantages just mentioned could not have been carried into effect without some sacrifice of space and convenience in the building itself, the architect might very well have paused, ere he ventured to propose what would have diminished the accommodation afforded by his present plan, however favourable it might be to external appearance. Yet that such would not have been the case is rendered apparent at the first glance by the annexed plan (*fig.* 7.), which shows that, so far from any thing being taken away from the building, something would have been added: enough to have afforded room at *a* for a staircase, leading immediately to the Lecture Room; which would have been a far preferable situation for it, inasmuch as it would have been immediately adjoining the entrance at this end of the building; consequently, those who attended the lectures would have passed up it at once, without at all intruding on the keeper's private residence; between which and the outer vestibule there would have been a door of separation, as well as of communication. Besides being well placed for such other purpose, this staircase would have been somewhat more roomy than the present one, and, therefore, more convenient for conveying pictures



up stairs into the Great Room. The other staircase might still have been retained, as at present, in lieu of the small one which is placed at *b*; and which being got rid of, the rooms on that side of the corridor are somewhat enlarged. The two rooms on the south side of this corridor have only three windows, in order to make this part of the exterior accord with the rest of the façade; where (as will be seen by referring to the elevation, fig. 1. p. 25.; or to the ground plan, *fig.* 10.) there are only three windows on each side of the portals to the thoroughfares.

Thus not only is the number of the windows and niches diminished and equalised (both which circumstances I consider desirable rather than not), but a centre window is also obtained in each of these *arrière-corps;* and this, it will hardly be denied, is an improvement in the composition. On the other hand, I freely admit that is not effected without some sacrifice in the interior of the eastern wing; because one of the two front rooms of the keeper's residence can have only a single window; and, were it partitioned off from the other, so as to bring the window in the centre of the side of the room, that room would be rendered very much smaller than the adjoining one. In order, therefore, to equalise them, in some degree, as to size, they are divided according to the mode shown in the above plan; where it will be seen that the larger room has a recess brought forward into it, forming a smaller one on each side of it, in one of which would be a second window; and this bay (for such it may be considered) would throw a great deal of light into that angle of the room. In both rooms, the architectural symmetry, in respect to the position of the windows, would be kept up by slight breaks in the walls, and corresponding mouldings on the ceiling; though the plan is on by far too small a scale to allow of such minutiæ being pointed out in it; and, in fact, such particulars would require to be expressed by means of sections or internal elevations of the sides of each room. For what may, after all, be deemed objectionable in this part of the plan, necessity must be the excuse; and, in an edifice of this description, it is, I conceive, allowable enough that such a subordinate portion of the interior as the keeper's residence should be made to give way to what concerns the façade, rather than *vice versâ.*

The part *z* in the plan, on the north side of the eastern thoroughfare into Duke's Court, might be built upon or not, as occasion should require. Yet, even were that portion of the eastern façade to remain a mere screen, without any rooms behind it, the thoroughfare itself must be enclosed on both sides. Well aware am I that there would have been difficulties first of all to be got over, before what is here recommended could have been carried into effect; but they might have been materially lessened by giving up to the premises against which the building would thus be made to abut the piece of ground *z*, as indemnification for the inconvenience sustained; the condition being that the windows, in the part so added to them, should look into Duke's Court.

An elevation of the eastern façade, as thus reshaped and extended, is shown in *fig.* 8., which the reader may compare with that in p. 27. fig. 2.

The curve, with the two columns in it, at the south angle, would not, indeed, totally conceal the oblique position of the

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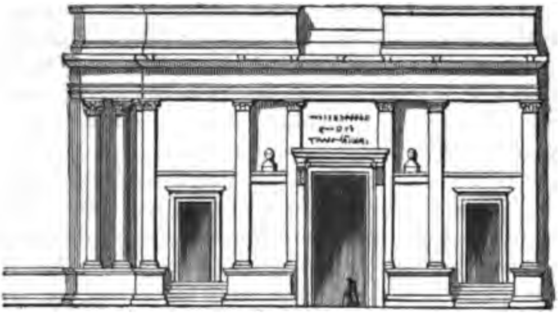
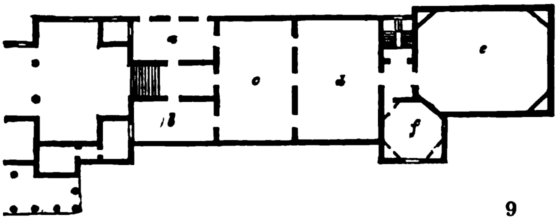


two fronts with regard to each other, but it would prevent that obliquity from being at all offensive: neither could it be objected that this curve would require that there should be a similar one at the western extremity of the principal façade, the extremities themselves being set considerably back, and the distance between them being so great, that they can hardly be seen at the same time from any point of view, more than at the Bank.

Fig. 9. gives the plan of the upper half of the building; namely, that belonging to the Royal Academy, from which the whole of that floor may be perfectly understood; the two halves being in every respect similar. How far the architect has economised the space allowed him will be seen almost at a glance; for the whole of the space between the staircase on this side and the corresponding one opposite (that is, an extent of 100 ft.) constitutes merely the upper part of the entrance halls, and the intervening one, which separates them from each other. Undoubtedly, there will here be considerable effect, enhanced, moreover, by the two screens of columns on the level of this floor, through which a view will be obtained from the landing of one staircase to that of the other. These screens, however, are in themselves rather meagre, there being only two columns in each, although there is ample room for four, without rendering the intercolumns too narrow; especially as, if even were they inconveniently narrow, supposing them to be where persons would have to pass through them, here they are intended for no such



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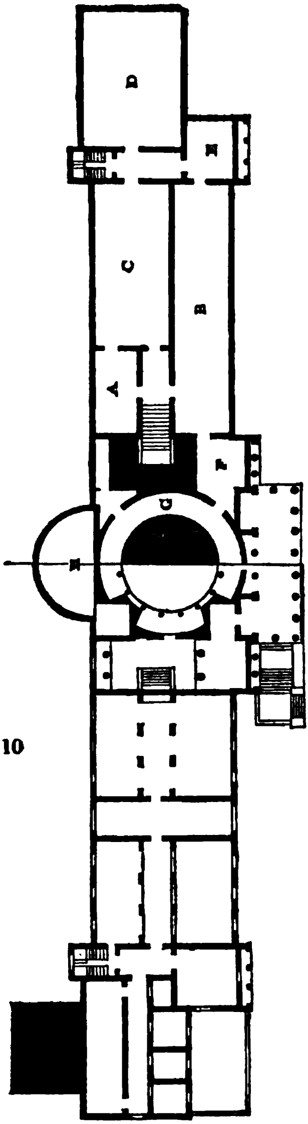
purpose, but merely form open ranges of columns resting upon walls.



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Even admitting that what is thus bestowed on the entrances and approaches could very well be spared for the purpose, still the display here made cannot be other than unfavourable to the picture rooms themselves; which, owing to such striking contrast, must, when first entered, appear smaller than they really are; *a* and *b* in *fig.* 9. (the first to be appropriated to architectural drawings, the other to models) being only 35 ft. by 19 ft.; and *c* and *d* 50 ft. by 32 ft. and 35 ft. respectively. The room *c*, or Antique Academy, is entered, not at one end, but at its side; and has, besides, no fewer than six doors, which greatly abridge what is technically called the *line*; and the spaces between the doors are reduced to about 9 ft.; which width, if the pictures are to be properly hung, cannot be entirely covered with pictures, else those who look at them must be subject to perpetual annoyance and interruption from persons brushing by them as they pass from one room into another. The room for the architectural drawings (*a*) is likewise very much abridged by one of its sides being cut up by windows, the necessity for which is not at all apparent; because the corresponding one (*b*) is lighted by a skylight. From the School of Painting (*d*) we pass on, through a lobby, on one side of which is the secretary's room (*f*), into the Lecture Room (*e*), or Great Room, as it is more generally designated.

Throughout the whole of this arrangement of the interior, there appears to me to be very little of merit, study, or contrivance. What kind of arrangement I should have preferred will be seen by the plan *fig.* 10., one half of which shows the upper floor and exhibition rooms of the

Academy, the other the lower floor of the National Gallery, with the thoroughfare into the barracks.

On ascending the stairs, we should turn on the left into A, which would be, as before, for the architectural drawings; or, by the opposite door, enter a gallery 108 ft. long by 24 ft. wide, beyond which there would be an additional room (E), for miniatures, &c., instead of an office for the secretary, which might be on the lower floor. C, which measures 68 ft. by 30 ft., has only three doors, two at the end adjoining the staircase, and one at the other; and D would have a door in the centre of one of its ends, immediately facing a principal picture hung at the further end of the room; while at the opposite extremity of the vista, between the doors at the west end of C, there might be another conspicuous painting. The models, which seldom exceed a dozen in number, might be placed on the landing, or upper hall (F), leading from B into the upper gallery of the rotunda (G). In this central circular hall, which would be immediately beneath the dome, works of sculpture might be placed in the four recesses behind the peristyle of columns below; besides which, there would be the sculpture room (H), as at present, though somewhat less, it being reduced to an exact semicircle.

In regard to this rotunda, the mere shell and external dome might have been erected at first, the completion of it being postponed indefinitely, until sufficient funds for the purpose could be provided: and, perhaps, it would be sounder policy, were we, instead of curtailing and cutting down a plan, so as permanently to mar the whole of an architectural project, to carry it into execution progressively; by which means, although a building might remain partially incomplete for a term of years, it would ultimately be more perfect. Admitting, however, that insuperable pecuniary difficulties stood in the way of what is here recommended, it would then be a question whether it would not have been better to have omitted any external dome altogether; and it must be confessed that such a feature has nothing particularly to recommend it for a picture gallery, especially when, as in Mr. Wilkins's building, it is neither called for by any thing in the plan itself, nor made to contribute to internal splendour.

Admitting, however, that, as far as this rotunda is concerned, I have, without at all enlarging Mr. Wilkins's plan, greatly exceeded the point to which he was obliged to limit it, it can hardly be objected that the other variations, namely, those in the disposition and forms of the exhibition rooms, could not have been adopted without material increase of expense, or without requiring the design to be remodeled throughout. In fact, my object has been to show how, while still adhering to the general outline of his present building, Mr. Wilkins might have filled it up better both externally and internally. What I have done, therefore, is to be regarded merely as correcting the defects I impute to it, and not at all as what I myself should have proposed for the purpose.

I know not whether Mr. Wilkins will say that it is exceedingly easy for any one to improve upon a design when once shaped out (that is, supposing he will admit that there is the least improvement manifested in my sketches); yet it appears to me that there should be no room left for improvement, unless we choose to lose sight altogether of what the architect originally contemplated: much less ought a professional man, and, among professional men, least of all Mr. Wilkins, to fall into errors, both of taste and of judgment, so offensive and glaring, that they may be detected, and might have been avoided, even by such an *imbécille* as

An Amateur.

Art. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By William Bland. Essay VI. *Relative to the Practical Application of the foregoing Principles to Bridges.*

Rochester Old Bridge. — The diagram *fig.* 11. represents the first three arches adjoining Stroud. The dimensions of the arch 3 and of the piers, &c., are as follows: —

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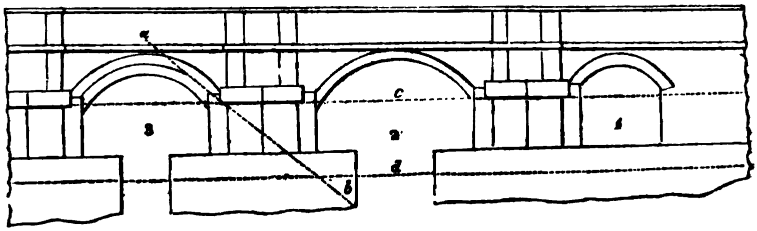

The span is 30 ft., and is not quite semicircular; the piers are 22 ft. through from arch to arch; the width of the piers is 22 ft. within the cutwater; and the height of the piers above the solid ground is assumed to be 26 ft. The line *c* represents the high-water mark, and the line *d* the low-water mark.

Having submitted this arch and piers to experiment, the results were, that the arch, composed of voussoirs only, and the piers, carried 49 lb. on the crown; which, at the proportionate rate of 9 tons to 1 lb., equals 441 tons. The experimental model employed was on the scale of 1 in. to 18 in. of the bridge, therefore a cubic inch contained 3⅜ cubic feet; and as 20 cubic inches of the model weighed half a pound, equalling 67½ cubic feet, and 15 cubic feet of stone is a ton, then half a pound equals 4½ tons. The width of the model was only two sevenths of the bridge, and balanced with 14 lb., or, on the whole width, 49 lb.; which, at 9 tons to a pound, equals the sum stated above of 441 tons. With an equal and similar arch abutting against the first, having one foot on a pier common to both, and the two outside piers immovable, either arch carried 22 lb. on two sevenths of the width, therefore 77 lb. on the whole width; equalling 693 tons. This weight is quite sufficient to prove the stability of the structure under consideration; which stability and strength are the results of the great thickness of the piers, which allow the straight line *a b* to be drawn within the masonry, from the top of the road over the crown of the arch, to nearly the bottom of the assumed height of the pier. The proportion of the diameter of the pier to the span of the arch is, in this instance, as 22 is to 30.

This building was constructed upon similar principles to those employed in the erection of Old London Bridge; having irregular-sized small arches, with large piers standing upon a foundation of piles, and protected by wide starlings, which causes a dangerous flow of water at every rise and fall of the tide. To remedy this evil in a degree, the two centre arches of Rochester Bridge were lately thrown into one, and the structure now has ten arches.

Sir Robert Knolles, who was the founder of this bridge, erected it in the reign of Richard II. It was completed in the year 1392, and considered a noble work in those days.

Rochester New Bridge is proposed to be erected from the design of Sir Robert Smirke.

This bridge is intended to have a horizontal roadway over it, and the arches are each to be of 100 ft. span. The elevation (*fig.* 12.) shows one arch, one pier, and a land buttress. The particulars of the dimensions are as follows: — The span is 100 ft.; the rise 15 ft.; the curve of the arch is the segment of a large circle; the thickness of the piers from arch to arch is 16 ft., or one sixth of the span; and the width of the piers is

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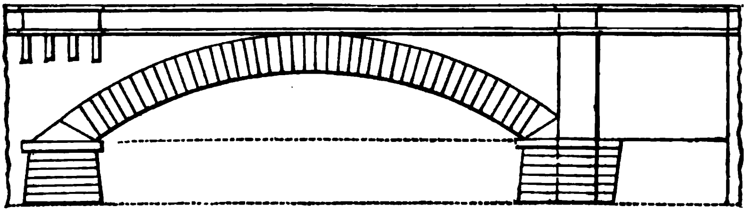

about 30 ft., the breadth of the bridge being 28 ft. The height of the piers is assumed to be 20 ft.

On constructing a model, to a scale of the proportion of 4 ft. to 1 in., and putting the same to experiment, it proved that an arch of the dimensions of *fig.* 12. just balanced on piers 16 ft. thick and 16 ft. high. From the figure, it will be seen that the dimensions of the pier increase in thickness from the springing of the arch downwards; consequently, this increase of base adds materially to the stability of the pier, which, if allowed to equal 20 ft. at the base, will balance the arch upon it when raised to 20 ft. in height. When the arch was bricked up level with the crown from pier to pier, it carried 1 lb. on the crown. With another arch equal and similar, abutting against the first, having the two end piers immovable, and the two arches composed of voussoirs only, either of them carried 9 lb.

It has been before mentioned, that the scale of the model equalled 4 ft. to 1 in.; but the width of the voussoirs was only 4 in., or 16 ft., which is about half the true width. Now, 20 cubic inches of the model equalled half a pound, and 1 cubic inch bears the proportion of 64 cubic feet; which, when multiplied by twenty, gives 1280 cubic feet to half a pound. A ton contains 15 cubic feet of stone; therefore, half a pound of the model equals 85 tons, or 1 lb. equals 170 tons; which latter was the weight the arch balanced under when the haunches and space over the pier were filled up level with the crown of the arch of half the proper width. The whole width, then, would balance with nearly 340 tons, the pier having no counteracting arch or buttress. But with abutting arches, the model carried 9 lb., when composed of voussoirs only; consequently, when the masonry is completed to form the horizontal road, the arches and piers will carry very considerably more than 9 lb.: indeed, 18 lb., or 3060 tons, may be sustained on thecrown of any of the arches. This weight is sufficient to prove the strength and stability of this fine structure for the safe passage over of any loads, whenever it may be erected.

The great difference between Rochester Old Bridge and the proposed new one, as planned by Sir Robert Smirke, is in the thickness of the piers of the former bridge, to those of the latter, when the spans of the arches of both are considered; the one being three fourths of the span, the other one sixth.

Waterloo Bridge. — This masterpiece of bridges, the work of Mr. Rennie, was finished and opened in the year 1817. It consists of nine cycloidal arches, each of 120 ft. span, with a horizontal roadway.

Fig. 13. exhibits one arch and two piers. The span of the arch is here drawn, for convenience, more after the elliptic form than that of the cycloid. The thickness of the piers is 20 ft.,

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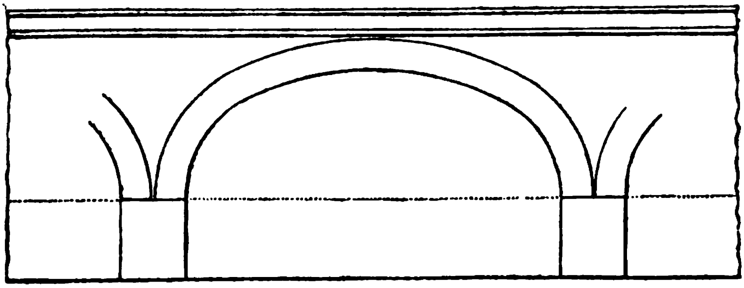

which is one sixth of the span of the arch. The width of the piers is from 46 ft. to 50 ft., and their height is assumed to be 25 ft. The model employed for experiment was on the scale of 1 in. to 5 ft.; and, being 4 in. wide, it equalled two fifths of the width of the bridge.

The model arch, when composed of voussoirs only, balanced on piers 4 in. thick and 5 in. high; that is, on piers 20 ft. thick and 25 ft. high. When the arch had the haunches and spaces over the piers raised with wooden bricks to the level of the crown, it balanced with 2½ lb. placed on the crown. Another arch, of equal and similar dimensions, being placed with one foot on the same pier as the first, which then became a middle pier, the two outside piers being made immovable, and both arches composed of voussoirs only, either arch balanced under the weight of 5 lb.

The scale of the model being 1 in. to 5 ft., there are, in proportion, 125 cubic feet in 1 cubic inch; and, since 20 cubic inches of the model equal the weight of half a pound, then 2500 cubic feet will be in proportion to the same weight. Now, 15 cubic feet of stone equals 1 ton; therefore, there are, in proportion, 166 tons in half a pound; and in 2½ lb., 830 tons; which latter is the weight the arch and piers will balance under, when it has masonry to the level of the crown. Let it be remembered that this 2½ lb. is supported by only two fifths of the width of the arch, which latter would, if of the full width, carry 2075 tons. With another arch abutting against the first, either of them will then balance with just double of the above weight when composed of voussoirs only, or 4150 tons; consequently, with masonry to complete the bridge, either of the arches would sustain considerably more. From this, it is apparent that 6, 20, or even 50, tons would have no effect towards disturbing the equilibrium of this superb fabric.

On comparing Rochester New Bridge with Waterloo Bridge, there appears this difference: the former balances on a pier much less in height than the latter, when a single arch of both are considered; but, when the arches have others abutting on them, the strength of the former becomes conspicuous, on allowing to both the same width. This is explained by many of the experiments in the foregoing essays, simply by the nearer approach of the straight line.

Whilst constructing the Rochester New Bridge model, a difficulty was experienced in preventing the arch, composed of voussoirs only, from forcing off the top courses of the piers, which was not the case with the cycloidal arch.

The architects of a few centuries back, and those of the present day, differ considerably in the proportions which each employed in the formation of bridges; the arches of the former being small, with very large piers; whereas those of the latter are of very large span, with proportionally small piers. The modern architects, it must be admitted, have immense advantages which were not available to their predecessors; not only by the experience they derive from the labours of those gone before them, but from the great progress which both art and science have made, comparatively within these few years. The principal advantages have been, and are, that stone of any dimensions may be procured for voussoirs, and the steam-engine may be used to clear out the water whilst forming foundations in rivers.

It will be seen by the sequel that the constructors of Rochester Old Bridge and of London Old Bridge were correct, as far as circumstances went. For example, let the diagram *fig.* 14. represent arch 3. of Rochester Old Bridge, being 30 ft. span, 9 ft. rise, and forming the segment of a circle. Now, this segment corresponds with the segmental arch 3., but is composed of thirteen voussoirs. It has been observed that the arch composed of twelve voussoirs just balances on piers 4 in. thick, and 8 in. high; and an arch composed of thirteen voussoirs will balance on a similar pier; while, on increasing the thickness of the piers to 6 in., the same arch is found by

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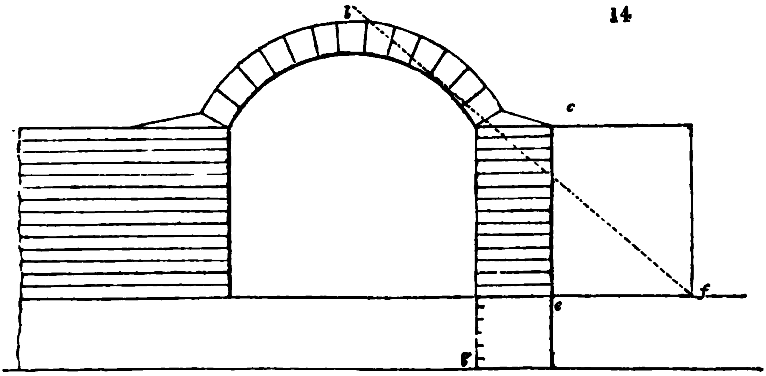

experiment to balance on them when raised to 20 in. high; that is, from *g* up to *c* in the diagram *fig.* 14.

It will be seen, when treating of the arches and piers in churches, in a subsequent essay, that the proportion of one sixth regulates the dimensions of the piers as to their diameter and height. The truth of this law is confirmed in the above instance; since, having increased the base of 4 in. to 6 in. in thickness, the additional 2 in., being multiplied by 6 in., give 12 in.; which, when added to 8 in., the former balancing height, equal 20 in., the latter balancing height. Let 6 in., or six courses, be taken from the pier *c g*, leaving the height *c e*: this, according to the same law, equals 1 in. of increase of thickness to the pier; and the scale of the model being 1 in. to 1½ ft., *e c* will be 21 ft. high, which corresponds nearly with the assumed height of the pier of Rochester New Bridge.

On putting to experiment this thirteen voussoir arch, with a pier 14 in. in height, they balanced with three quarters of a pound on the crown of the arch; and, being of the same scale of model as employed for Rochester Bridge, will equal 23½ ⅛ tons on the whole width. With another equal and similar arch abutting against the first, either arch balanced with 6 lb., which will equal, for the reason given above, 189 tons. Let this weight be compared with the weight which the arch 3. of Rochester Old Bridge will carry, having the piers 22 ft. in thickness; likewise, let it be compared with Rochester New Bridge under the same circumstances of voussoirs only: —

With a single arch and pier, they balanced as under: —

The thirteen voussoir arch and pier balanced with 26½ ⅛ tons.

Rochester Old Bridge balanced with 441 tons.

Rochester New Bridge just balanced.

With another arch abutting, the following were the results: —

The thirteen voussoir arch, &c., balanced with 189 tons.

Rochester Old Bridge balanced with 693 tons.

Rochester New Bridge balanced with 3060 tons.

From these results, it appears that the pier *c e* (*fig.* 14.) is not of sufficient thickness to support the necessary weight of laden carriages, without endangering the equilibrium of the bridge; yet the pier is nearly one third of the span.

On looking back to the fourth experiment in Essay IV., it will be seen that strength can be given to a fabric by raising the structure with masonry over the piers and crown of the arch; and if this were carried up in *fig.* 14., the arch would sustain a great weight. But then what a mass of masonry would be required; adding not only to the expense, but proving an immense load on the piers, which are situated upon an uncertain foundation, besides raising the roadway to a most inconvenient height?

It appears, then, from this, that there was no other alternative with the ancient builders but to increase the thickness of the piers, as *c f*, taking the never-failing straight line *b f* to regulate the dimensions.

Enough has been shown, to prove that the proportion between the thickness of a pier and the span of its arch is not regulated by each other, for structures destined to have great and uncertain weights to pass over them. It is the proportion of the mass of matter of the arch, to the weight that is to pass over it, which must regulate the whole: for instance, an arch of only 30 ft. span cannot contain the same weight of materials as an arch of 100 ft.; consequently, a weight of only 6 tons would have proportionally greater effect over the equilibrium of the 30 ft. span arch than it would have over the arch of 100 ft. span, allowing the same width of roadway to each.

It is this, and this only, which must ever require thick piers for small arches, and which will allow of one sixth of the span of large arches for the thickness of their piers; at the same time, never omitting to keep within, or, rather, not to exceed the balancing height of a voussoir arch, on its pier. This, under all circumstances of bridge architecture, ought to be the limit.

Having proceeded thus far with bridges, a list is subjoined, showing the relative weights sustained by the bridges which have been treated of.

First, of single arch bridges: —

Loose Bridge, with masonry level over the crown and piers, carried 1134 tons.

Ponty Prydd Bridge, with voussoirs only, and piers immovable, carried 1360 tons.

Secondly, of bridges of more than one arch: —

Rochester Old Bridge, with voussoirs only, employing one arch and two piers, carried 441 tons.

The same bridge, with another arch abutting to the first, carried 693 tons.

Rochester New Bridge, with voussoirs only, employing one arch and two piers, just balanced, or carried nothing.

The same bridge, with another arch abutting, carried 3060 tons.

Waterloo Bridge, with voussoirs only, employing one arch and two piers, just balanced, or carried nothing.

The same bridge, with another arch abutting, carried 4150 tons.

When two arches were placed abutting each other, the middle pier only was movable: the end piers were fixed.

ART. IV. *Candidus's Note-Book.*

Fasciculus III.

> "Sicut meus est mos,
> Nescio quid meditans nugarum; et totus in illis."

I. PROFESSORS sometimes perpetrate very odd things, — what not only look like absurdities in the eyes both of professional and non-professional persons, but are apt to be mistaken by the uninitiated vulgar for downright blunders. This is the case with Professor Soane, who, in the building called the Board of Trade, at the corner of Downing Street, has put a range of mezzanine windows immediately behind the entablature, at the distance of only a few inches; a circumstance utterly indefensible as regards both the windows and the entablature, inasmuch as we perceive that the former are quite obstructed, and the latter is a mere piece of decoration stuck up before the front, and worse than useless. Had he strained his ingenuity ever so little, he must have discovered that, by stopping up the soffit of the entablature below, and making the entablature itself a parapet before the windows, which might have risen somewhat higher than the level of its upper line without being visible from the street, not only would the rooms to which those windows belong have been infinitely better lighted, but no one would have been aware of there being any windows at all in that situation.

II. Out of tender regard to the interests of newspapers and penny-a-liners, I ought to allow that the usual number of accidents must be kept up; nevertheless, I infinitely prefer the benevolence which would prevent them, to the maudlin sympathy they excite when they occur. For this reason, I think humanity would be better manifested by adopting some regulations which would greatly lessen the danger to which foot passengers are exposed in crossing many of our wide streets. Wherever the carriage-way is 50 ft. in breadth, lamp-posts should be erected at all the principal crossings at least, placed on a platform raised about 6 in. above the pavement, and about 10 ft. square, so that the distance from it to the foot-pavement would be only 20 ft., which would still leave sufficient room for two carriages to pass. A few lamp-posts, so placed, could not possibly be deemed obstructions, certainly not so much so as a line of hackney coaches and cabs, which are now permitted to stand in some places for a considerable extent. A coach-stand itself serves, in some degree, as a protection in crossing a wide street; but it also prevents a person from clearly discerning whether any vehicles are coming on the side beyond it; so that, when halfway over, he may sometimes find himself in imminent peril. Where a street is not sufficiently wide to admit a carriage-way on each side of such a lamp-post as has just been described, another mode might be adopted; namely, to form a jetty, or jutting-out piece, from the footpath on each side, so as to contract the space between them to about 20 ft.: of course, these jetties should be guarded by railing of some sort; and there should be a lamp erected at the extremity of one of them, if not of both, for the sake not of foot passengers alone, but of carriages likewise.

III. As a piece of architecture, the Bourse at Paris has been greatly overrated: it has a fine peristyle, and nothing more; and even the effect of the colonnades themselves is greatly impaired by the two ranges of arched windows behind them; which not only indicate a deviation in style, but produce a most disagreeable monotony. This would not have been the case had there been no other apertures than doors in the lower part, and a range of square-headed windows above. Still better would it have been had there been a window only to each alternate intercolumn, for in that case not only would they have been less crowded together: but there would also have been a certain contrast between the colonnades and the walls behind them, the number of apertures in the latter being only half that of the outer columns. That the exigencies of the building, perhaps, opposed considerable difficulties to such an arrangement, I willingly concede; yet that these difficulties might not have been surmounted by study and ingenuity, is more than I can easily believe.

IV. The church of La Madeleine has likewise, in my opinion, been extolled with too much exaggeration of applause. Undoubtedly it is an imposing work; and, if we can be content with the fac-simile of an ancient Corinthian peristyle temple, we ought to be perfectly satisfied with it. In itself, we may allow it to be a beautiful object; gratifying, as a restoration, or a model on a large scale, derived from a noble prototype, of which it conveys the full effect: nevertheless, it so utterly disclaims all pretension to originality, that it can hardly be received as an example of the present state of architectural talent in France, unless taste and talent are to be regarded as identical; whereas it is the test of superior ability to be able to transpose the beauties of ancient architecture into other forms, retaining all its spirit, while manifesting it differently. Rigorous criticism might further object, that the exterior is too much of a mere mask; that there is no outward indication whatever of there being domes within; and as little to designate to the eye at all, that the building is a Roman Catholic church. It is true, Schinkel has concealed the dome over the rotunda, in the Museum at Berlin, by screen walls; yet the kind of attic which he has thus formed above the centre of the edifice serves, independently of its effect in the composition, to indicate greater loftiness in that part of the interior.

Art. V. *Cowell's Patent Sash Suspender.* By John Reynolds.

Having myself proved the utility of Cowell's patent sash suspender, I feel somewhat competent to speak as to its merits. This invention completely supersedes the necessity of servants or workmen getting outside of windows, either to clean, paint, or repair; a desideratum, I think, all will gladly welcome; particularly as the numerous accidents and loss of life from window-cleaning alone have of late been very appalling; it being calculated that upwards of two hundred persons have lost their lives by this practice within the last twenty years.

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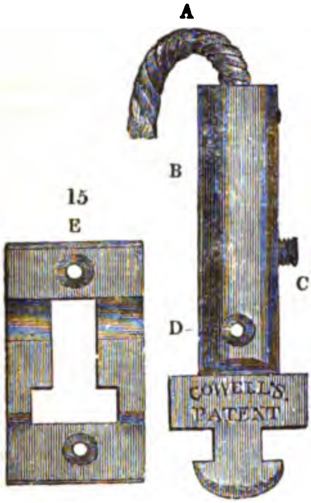
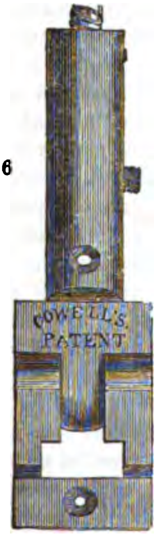


The mechanism is so simple, that a child may manage it: the only difference is, that the line, instead of being nailed to the sash, is secured in a socket provided with a hook. To this is fitted a plate, or eye, which is let into the sash, so that it can be attached or detached in an instant, and with the greatest ease. When I reflect on the years that have rolled by, the lives that have been sacrificed, and the great inconvenience attending the old method, I am truly astonished to find the difficulty overcome by so simple a contrivance, and at so trifling an expense. A complete set of the brass suspenders, including an ingenious brass bolt for the bead, instead of nailing it, only cost me 3*s.* 6*d.*, and the fixing of the same 2*s.* This, I think, needs no comment.

16



My feelings would induce me to say much more on the subject; but I will only add that, should any of your readers wish to inspect the plan, I shall not deem it an intrusion if they call at my house, *en passant*, wishing, as far as my humble endeavours can avail, to assist in the preservation of life, and serve the cause of humanity.

23. *Chadwell Street, Myddelton Square, Jan.* 10. 1837.

Figs. 15. and 16. will show the nature of this invention: A, the sash-line; B, the socket that receives the line for the sash; C, the screw that presses the spring within, to secure the line; D, the aperture to show that the line is at the bottom; E, a plate, or eye, to be let into the sash. *Fig.* 16. shows the whole attached.

Mr. Cowell has printed testimonials in favour of his invention, signed by Dr. Birkbeck, and Messrs. Savage, Cottingham, and Cottam, architects. Mr. Cowell's manufactory is in Lower Street, Islington.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

NEW CHURCHES.—Handsome subscriptions have been entered into for the erection of new churches at the following places: — *Monk Bretton*, near Barnsley; *Accrington*, near Manchester; *Bury* and *Blackburn*, Lancashire; *Oswestry*, Shropshire; *Bogelf*, North Wales; and *Crieff*, in Scotland.

Reported Failure of the Foundations of the Bank of England.—We understand that the new sewer, built in the street on the west side of the Bank, has been most effectual in draining from the adjoining soil the waters with which it was saturated. The whole of this neighbourhood has always been affected from the course of the Walbrook, formerly running through it; so that the subsoil is, in fact, a thorough swamp. On this bad foundation, the houses adjoining, and the Bank, have been built, with every precaution of piles and planking. It is said, however, that the draining of the waters into the new main sewer has so far dried up the soil, that it has caused settlements of a very serious nature in those parts of the Bank which are adjacent to it, and especially in the elegant Doric vestibule, which shows some very large cracks and other signs of considerable settlements. We have heard, but cannot vouch for the truth of the report, that, in consequence of these settlements, the whole extent of the foundations of the Bank are now kept artificially under water, and with such perseverance, that the directors will not allow the New River Company, whose pipes pass under the Bank, to repair any of their pipes, which are supposed to leak to a very serious degree, as the supply arising from that circumstance tends to keep the soil damp, and thus prevent the decay of the timbering upon which the walls are built, and which would proceed much faster if the ground were alternately wet and dry.—*M. London, Jan.* 12. 1836.

Foundling Hospital. — Owing to alterations and repairs in the chapel of this hospital, which were very necessary to be attended to, it has been closed for several months, but will be reopened in the beginning of next month, for the performance of divine service. Some massive pillars, which before stood in the organ loft, have been removed, and there has been substituted for them an iron truss, superior in weight and casting to any other known in the metropolis. This has sufficiently counterbalanced the support they gave to the roof; and the view of the children, which was before obstructed, is now without any interruption. — *Frederick Lush. October* 27. 1836.

New Bridge. — Early next session of Parliament, it is intended to apply for a bill to sanction the erection of a bridge across the river from Horseferry Road to Church Street, Lambeth. The span of the bridge would be about the same as that of Vauxhall Bridge or New London Bridge; and it is much to be hoped that it will be carried into effect. — *Frederick Lush, Oct.* 27. 1836.

The new Houses of Parliament are to be commenced without farther delay, agreeably to Mr. Barry's plan. This was decided by the Commissioners on Jan. 19. The lofty tower is to be rendered available for keeping the public records of the country. (*Morn. Chron.*, Jan. 23.)

Heating by Gas. — The novel application of heating by the flame of burning gas is coming very extensively into use. The plan has been recently introduced at Islington Church, and at St. Michael's Church in the Strand. The vestry-room of St. Sepulchre's, His Majesty's Royal Mint, Westminster Hospital, and several banking-houses and other public buildings, are also warmed in the same manner. — *W. P. G. November* 2. 1835.

Designs for Literary Retreats. — The Literary Fund Club have it in contemplation to build literary retreats for some half dozen (as a beginning for the plan, which, if it succeeds, will be extended indefinitely) literary characters, to whom a house, rent free, and a small garden, might prove a happy retirement in their days of the "sear and yellow leaf." (*Morn. Chron.*, Jan. 13.) [We would suggest the idea to young architects of preparing designs for these literary retreats; either as detached cottages, surrounded by their gardens, or all the six united in one building in the centre of the gardens, the latter radiating from them on every side. The cheapest mode of raising dwellings of this kind, which might be called literary colleges, would be to arrange a number of apartments, to the height of five or six stories, round a central staircase, from which heat might be supplied to all the rooms; and gas might be conducted to all the kitchens for the purposes of cookery, washing, &c. Any ingenious designs of this kind we shall be happy to publish. Some useful hints, by Junius Redivivus, may be found in the *Mechanic's Magazine*, and in the *Monthly Repository*; and also in our *Encyclopædia of Cottage, Farm, and Villa Architecture.*]

Architectural Drawings at the Royal Academy. — "*Royal Academy, Nov.* 10. 1836. Notice is hereby given to such students as have obtained the gold medal in the class of architecture, that they may become candidates to be sent to the Continent for three years, by delivering to the keeper, on or before the 10th day of March next, a recent and attested specimen of their abilities. The election will take place on the 10th day of May next. — *Henry Howard, R. A., Secretary.*" [We should like to see our young architects more fired by the ambition of distinction. The drawings at the Royal Academy for the silver medal (the subject, the façade of the Goldsmiths' Hall), we have been informed, were very indifferent, evincing great ignorance of the Corinthian capital. If such a subject had been given in France, the result would have been very different.]

The District Surveyorship of St. George's, &c. — At a meeting of the magistrates for the county of Middlesex, held on the 8th of November, a ballot took place for the district surveyorship of St. George's in the East, and St. Botolph without, Aldgate, vacant by the decease of Mr. Sibley. The candidates were Mr. William Grellier, Mr. Henry Flower, Mr. R. C. Carpenter, Mr. James Davies, and Mr. Kendall, jun. The two latter resigned; and, upon the numbers being declared, there appeared, for Mr. Flower 58; for Mr. Carpenter 20; and for Mr. Grellier 18. Mr. M'William commented with severity upon the fact that two of the candidates were near relatives of magistrates upon the bench; and moved that the names of those who voted for each of the candidates should be taken down. The motion was seconded by Sir J. Gibbons in strong terms. — *G. B. W. London, Dec.* 7. 1836.

The Royal Exchange was much damaged by the severe gale of November 29. A large quantity of the lead upon the roof, being dislodged by the wind fell into the enclosed area, carrying with it about 40 feet of the western balustrade. The large mass of lead and stone, weighing upwards of a ton, descended with a tremendous crash, but, fortunately did no further harm than that of destroying the entablature over the statue of Henry VIII., and knocking away the sceptre from that of Edward VI. — *G. B. W. London, Dec.* 7. 1836.

Parliamentary Agency Offices. — On the 3d of December, the first stone of an extensive range of buildings, intended for Parliamentary Agency Offices, now in course of erection, by Mr. Charles Pearson, in the Bird Cage Walk, was laid with great ceremony by the Lord Mayor, attended by the sheriffs, several members of parliament, common councilmen, &c. The design, which is highly spoken of, is by James Elms, Esq., surveyor to the port of London. — *Id.*

The Signor Scotti, an Italian civil engineer, who was in the service of the Emperor of Austria, and had the care of one of the principal roads over the Alps, is now in this country, for the purpose of making himself acquainted with our railroads. This intelligent engineer has laid down some maps and sections of the Alps, noting the various strata of the rocks at their several heights, the levels at numerous points; and, in fact, has collected data of a geological and scientific nature of the utmost importance. His studies on road-making are extremely curious, and prove that the knowledge of this important subject is not confined to England, but that many facts of great interest may be learned abroad, of which we have no idea. — *B. London,* 1836.

BERKSHIRE. — *Royal Berks Hospital.* — The committee have decided on the plans which appear to possess the most merit, and have awarded the premiums accordingly. The architect whom they engaged to assist them in forming a judgment is a gentleman of first-rate eminence, and surveyor to one of the largest hospitals in the kingdom. He laid down a scale of merit; and the committee found that the two designs which then ranked first bore the mottos of "Spero" and "Confido," both being the production of one architect, Mr Henry Briant of this town. One of the designs is Gothic, the other chiefly of the Ionic order. The first prize of 50*l.* was therefore awarded to this gentleman. The second premium of 30*l.* was awarded to a design with a motto "Tacere tutum est," sent by Mr. W. Newham, jun., 7. Bengal Terrace, Kent Road, London. The third premium of 20*l.* to a design with the motto, "I was sick, and ye visited me," to Mr. Inman, Eaton Square, London. We congratulate Mr. Briant on a decision which confers so much honour on his talents, and insures him a high rank in his difficult and honourable profession. (*Berkshire Chron.*, Dec. 21. 1836.)

DEVONSHIRE. — *County Lunatic Asylum.* — At a meeting of the guardians of the Poor Law Union in the county of Devon, on Thursday, Nov. 3., the Earl of Devon in the chair, it was resolved to build a County Lunatic Asylum; for which purpose Lord Rolle has munificently offered the ground required, as a free gift to the county. (*Exeter Flying Post.*)

KENT. — *Gravesend.* — *A public Grammar School* is nearly completed at Gravesend, the expenses of which are to be defrayed out of the corporation funds. Its architecture is purely Gothic, after the plan of Cobham Hall; and the building, when finished, will beautify the site on which it stands. — *Frederick Lush. Charles Square, Hoxton, Oct.* 16. 1835.

LANCASHIRE. — *Liverpool Custom-House.* — The three porticoes of the new Custom-house are now complete, the one to the north having just been finished. The western portico is seen to great advantage from the river and the Cheshire shore: the eastern much less perfectly from the front of the old Custom-house; and the northern will very shortly form a very noble and open principal front to the building, and be seen to great advantage from St. George's Cresent and Castle Street. When the alterations in South Castle Street (quondam Pool Lane) are complete, the view from the front of St. George's Crescent terminated to the left by the Town Hall, and the right by the Custom-house, and having in front the open space and handsome buildings of Lord Street, will be one of the finest in the town. (*Liverpool Times*, Dec. 1836.)

Liverpool. Useful Association. — To those gentlemen who, by their noble contributions to the Mechanics' Institution, have distinguished themselves as patrons of science, art, and literature, in this town.

Gentlemen, to persons who, like you, take an interest in any studies which are calculated to soften the affections or purify the minds of men, it will be unnecessary to mention how much effect of that nature the study of architecture is capable of producing; nor is it necessary that I should inform you, who are in constant communication with engineers and engineering speculation, how necessary it is that future engineers should be capable of producing and carrying into effect any schemes which may be required: but, as this letter is intended to convey some idea of what advantage may be effected by the formation of a society for promoting these objects, a brief explanation may, perhaps, be excused.

That the study of architecture is calculated to effect, in a certain way, the objects I have stated above, must, I think, to every reflecting mind, be self-evident; but, as there are some who prefer having propositions of the simplest nature proved to them, instead of exerting any ingenuity with which they are blessed to find them out, I shall endeavour to do so in as few words as possible.

We in general find that the contemplation of any beautiful object, as a painting, model, &c., excites certain feelings in the mind of the beholder, which, if improved upon, may be turned to a good purpose. If the accidental or occasional examination of such objects can produce good fruit, how much more likely is the constant contemplation to do so? In the one case the effect is ephemeral, in the other continual; and, by having models, &c., of a beautiful nature continually before him, the beholder may be incited to form a comparison between the one and the other; and thus his taste may be formed or improved: but, on the contrary, when the objects presented are in bad taste, or of obscure worth, such effect cannot be expected. If, then it be desirable that every one should have specimens of "the sublime and beautiful" constantly before him, no one will deny that it is necessary that there should be persons capable of producing them.

In this age, when every thing is done by means of steam, it is necessary that we should have persons competent to manage or improve on the different modes of using it; and now, when almost all inland communications are effected by means of railroads, it is essential that we should have men capable of surmounting almost any difficulty that may be opposed to them: they should be perfectly acquainted with the nature of the country, soil, &c., through which the intended road is to be laid. Of the different kinds of tuition, I believe it is generally allowed that mutual instruction is the one, of all others, most calculated to produce its object, as the different pupils have to prepare themselves by reading and thought to explain the subject they have undertaken.

Impressed with what I have now briefly stated, the young architects and engineers of Liverpool have formed themselves into a society for mutual instruction in the mysteries of their professions; and should you, or any other gentlemen, be disposed to assist them, I am convinced that it will be one of the most effectual ways of improving the intellectual taste of the town. For a further explanation of their objects, I beg leave to refer you to their rules.— *C. Sept.* 13. 1836. (*Liverpool Mercury*, Sept. 30. 1836.)

Mr. Coad's Plan for consuming Smoke. — Mr. Richard Coad of this town has taken out a patent (sealed July 10. 1835) for an invention of his for getting rid of the nuisances from steam-boats and factories, by making the chimneys consume their own smoke. To borrow a passage from a contemporary to explain this,—"The smoke is a certain quantity of the inflammable matter of the coals, which is lost by evaporation, instead of being burnt. Now, Mr. Coad's method consists in supplying this smoke with the quantity of heat that is necessary for its perfect combustion; and this is effected in a very simple and ingenious manner. An apparatus consisting of a series of small tubes, or chambers, so constructed as to expose a large surface to the action of the heat, is placed in the lower part of the chimney beyond the boiler: one end of the series communicates, by an open orifice, with the external air, while the other opens into a slit in the bridge of the surface. This is the whole contrivance, and it acts thus: — The superfluous heat in the chimney raises the temperature of the iron tubes to a high degree, and the draught in the chimney causes a current of air into the fire through every aperture, and, consequently, through the heated tubes: a current of hot air is thus thrown into the flame at every point where the smoke begins to be formed; and the effect is, that the deposition is prevented, and the flame and heat of the fire are both much increased, and not a particle of the smoke escapes from the top of the stack. It will be seen from the foregoing statement, that the means by which Mr. Coad accomplishes this object are as simple as they have hitherto been found effective; and the saving in fuel, from the peculiar operation of the invention, we are assured by several persons of experience, will be immense. The principal merit of Mr. Coad's patent consists in bringing back the caloric, which in almost every instance is entirely lost to the manufacturer. We trust, for the sake of the health of the town, that no feeling of dislike to new inventions will prevent the use of this apparatus from becoming universal. (*Liverpool Telegraph*, Dec. 14. 1836.)

Statue of the late Mr. Huskisson. — We have not yet had an opportunity of inspecting Mr. Gibson's monument of the late Mr. Huskisson, and we copy the subjoined paragraph on the subject from the *Liverpool Courier*, without identifying ourselves in any degree with the opinions of the writer. — *Edit. Merc.*

"The colossal statue of the late Mr. Huskisson has at length been deposited in the place destined for its reception; and in a few days the public will have an opportunity of gratifying their curiosity by seeing it, as well as will be compatible with its safety. The building in which it is enclosed is of a chaste and noble design: it is of a circular form, with a rustic basement about 10 ft. in height, which supports several Corinthian fluted columns, the intermediate spaces of which are filled with polished ashlar. Over the top of these columns are ten windows of 3 ft. square, carved out of solid stone. A moulded frieze and entablature is next raised over the columns, with carved ornaments all round the cornice, and above which is a stone dome, with ten perforations serving for windows. The whole is surmounted by carved ornaments, supporting a ball and cross. The diameter of the building inside is about 15 ft. The interior is ornamented by flowers, executed in stone. The entrance is by a flight of steps and folding-doors in the rustic basement. On the whole, the building is admirable in its conception, and exquisite in its finish; but it is to be regretted that its position in such an excavation as the cemetery is by no means calculated to exhibit it to advantage. Had it been placed on an eminence, it would have been one of the most tasteful mausoleums in Europe. In order to prevent damage to the figure, the door is glazed with plate-glass, through which it may be seen with great advantage. The statue itself, executed by Gibson, at Rome, is about 7 ft. 9 in. in height, and stands on a pedestal of 2 ft. 4 in., at the back of the building, facing the door. The figure stands erect, in a commanding attitude, with the right leg somewhat advanced. The arms crossing the breast, holding a scroll, and partially covered with a Roman toga, which hangs gracefully over the left shoulder, and falls in broad and massive folds over the lower part of the figure. The expression of the countenance is thoughtful and intellectual, and one which Mr. Huskisson, in the discharge of his senatorial duties, frequently exhibited, which it evidently has been the object of the artist to depict; and strongly reminds the spectator of the late lamented and distinguished member for Liverpool. We shall not, at present, go into the merits of this splendid statue: it fully sustains the fame of the artist, and adds another gem of the highest class of statuary art to the one by Chantry, in the Town Hall. The weight of the figure is between 30 and 40 cwt., and cost, it is said, somewhere about 1500*l.* The building, which was erected by Mr. Tomkinson (from a design by Mr. Foster, the architect engaged in the erection of the new Custom House), cost about 1400*l.* The whole building is surrounded by an area (containing a great number of vaults, many of which are let) enclosed by handsome railing, in architectural keeping with that of the building. Into this area the public will be admitted to view, through the plate-glass door, the statue of the deceased."

The following is copied from the *Liverpool Mail:*—"This is a noble work of art. Simple, majestic, calm, the attitude and expression of this fine statue leave nothing for the eye of taste and judgment in sculpture to desire. The execution of such parts of the figure as its position allows to be seen may, without hesitation, be pronounced faultless. Admirable and *practical* as is Mr. Gibson's knowledge of the anatomy which belongs to his art, there is here no ostentatious parade of that rare accomplishment, a vanity from which Michael Angelo himself could not abstain. The exquisitely modelled arm, which crosses the body with such graceful ease, and the manly chest, neck, and shoulder, display conspicuously the perfection of the human form in a state of rest. Not a muscle starts unbidden from its repose to mark an action which has no existence; nor does a vein obtrude too curiously its meanderings, to solicit the admiration of the uninitiated amateur. All is tranquillity, and a tranquillity full of grace and dignity. Though the above is intended as a mere general notice, it would scarcely be pardonable not to observe that the drapery of the figure has a noble breadth and simplicity, and that the right hand and wrist are in themselves a study." These remarks are thrown out to invite, rather than exhaust, criticism. (*Liverpool Mercury*, Sept. 30. 1836.)

LEICESTERSHIRE.— *A general News-room and Library* is about to be built in the town of Leicester. The news-room is intended to accommodate about 500 persons; and the total expense is not to exceed 3000*l.* The competition respecting this building was decided, by a very considerable majority, in favour of Mr. Flint of Leicester, for the best plan; and Mr. Weightmore of Sheffield for the second best. The rejected plans, which were numerous, were safely returned to their respective designers, with a handsome letter from the secretary accompanying each. — *S. T. Leicester, November* 3.

NOTTINGHAMSHIRE. — A cemetery is about to be formed by the Nottingham General Cemetery Company, who advertise that they will give 20*l.* for the best, and 10*l.* for the second best, design for the chapel and lodges, and for laying out the grounds. The plan may be seen, and all necessary particulars ascertained, by application at the office of Messrs. Clark and Wells, Nottingham. (*Nottingham and Newark Mercury*, Jan. 7. 1837.)

OXFORDSHIRE. — *Oxford. The new Vehicle Retarder.* — Much curiosity has been excited in Oxford by repeated trials of a new invention intended to regulate the speed of carriages when descending a hill, by means of which the coachman can instantaneously or progressively lock both the hind wheels. The apparatus was applied to a four-horse stage, which was loaded with passengers, and, on ascending and descending a hill, was found to answer all the purposes intended. The inventor then proposed that the coach should be taken down the hill without the horses, and it was frequently stopped while proceeding at the rate of twelve miles an hour. Many practical gentlemen had ample proofs of the principle of the invention, by having the coach lifted up, and the two hind wheels allowed to turn free on the axle; when it was found that a 2 lb. weight, placed on the extremity of the wheel, would bring it gently round; but, when the first degree of retarding power was applied, it took a weight, so placed, of 15 lb. to bring it gently round; the second degree, 36 lb.; the third degree, 56 lb.; and the fourth degree, three quarters of a hundred; but, with this weight, not one person was capable of moving either wheel on its axle. Mr. B. Pearson, organist of the city church, is the inventor. (*Oxford Journal.*)

SOMERSETSHIRE. — *Bath.* — The first stone of a new church in the Gothic, or pointed, style of architecture, from the designs and under the superintendence of G. P. Manners, Esq., was laid on the 21st of April last, by the Bishop of Bath and Wells. Under this stone there was deposited a copper box, containing thirteen beautiful specimens of the gold, silver, and copper coinage of the present reign; over this was a brass plate, bearing the following inscription: —" Other foundation can no man lay than that is laid, which is Jesus Christ. 1 Cor., iii. 11. St. Michael's Church, rebuilt by voluntary subscriptions." After which were the names of the bishop, rector, curate, churchwardens, architect, and builder. In the course of a few weeks, it will be covered in. The galleries are fixed, and also the columns which are to support the roof. The interior finishings, &c., are expected to be completed, and the church opened, about the middle of next July. — *W. P. G.*

SUFFOLK — *Ipswich. Revolving Shutters.* — An excellent and substantial house, with bookseller's and stationer's shop, and suitable offices for the publication of the *Reformer* newspaper, has just been completed here for the Honourable Baron Dimsdale, from the design of D. Hollingsworth, Esq., architect of this town, in which some new features in *street architecture*, as well as in *shop fronts*, are introduced. Of these I have here only to notice the shutters, which are also *Whiting's patent*. They are composed of a series of narrow rebated and beaded laths (in this case of deal, but they are also made in iron when required), attached by small hook and eye joints, let in flush. When down, they have the light appearance of a Venetian blind, combined with the strength of the ordinary paneled lift shutters; when up, they are concealed in a boxing at the head of the window, containing a pulley and roller, round which the shutters revolve, in the manner of a roller blind. A pulley with ratchet-wheel is concealed under the show-board of the window, by which, with a winch handle, the shutter is drawn up. The whole shop front, consisting of two large windows, and doors in the centre, can be shut up in about as many minutes, and this without going into the street. The possibility of breaking the windows or damaging the shutters is avoided; and they require no external fastening, their own weight keeping them down. I would recommend these shutters, as well as the principle of the sashes above-mentioned, to your correspondent *Eboracum* (p. 192.), as answering the object he has in view. — *Z. Hertford, Nov.* 9.

A new and elegant little Church was lately consecrated at Weshley, by the Bishop of Sodor and Man. — *W. S.*

A new Chapel has lately been erected in St. Clement's parish, Ipswich. —*Id.*

SURREY — *Dorking.* — A great part of Mr. Hope's valuable collection of sculptures, pictures, and books have been removed to his interesting seat, the Deep Dene, near Dorking, where a new library, a gallery, and an amphitheatre, to arrange and display antiques, have been built from Mr. Hope's designs, expressly for the reception of each class of subjects. (*Morning Chronicle*, Nov. 1. 1836.)

SUSSEX. *Chapel of Ease at Brightlingsea.* — The chapel has been erected at an expense of nearly 1400*l.*; which sum, with the exception of 300 guineas given by the Society for Building and Repairing Churches and Chapels, was raised by the subscriptions of the parishioners of Brightlingsea, and the clergy and other inhabitants of the neighbourhood. The chapel is constructed with white bricks, and is of the Early English character. The western elevation is extremely picturesque and characteristic. The tower is placed at the south-west angle of the building, containing a staircase to the gallery; the principal entrance door is placed on the west side of the tower, with two lancet windows over; it is then splayed off from a richly corbeled cornice to a light and elegant octagonal lanthorn, crowned by a graceful spire. The elevation is completed by a uniformly steeped gable, containing three lancet windows, the highest of which is 25 ft. The windows on the north and south sides are of the same character as those on the west front, divided by buttresses, with a steep pitched roof, so peculiar to that style. Its internal dimensions are 76 ft.

by 50 ft., affording accommodation for nearly 900 persons. From the use of moulded bricks for the ornamental portion of the building (in lieu of stone), the architect (William Mason, Esq., of Ipswich) has been enabled to construct this edifice, giving a greater accommodation, at less expense, than any other church hitherto built. (*Essex Standard, from W. S.*)

Petworth. — The Earl of Egremont is causing a number of handsome almshouses for the aged poor, with schools for children attached, to be erected on his estate at Petworth. — *W. S.*

WARWICKSHIRE.— *Bishop Ryder's Church, Birmingham.* — The Committee have decided in favour of the plans of Messrs. Rickman and Hussey. — *Id. London, Oct.* 1836.

The Litchfield and Tamworth Banking Company are about to erect a new branch banking house at Birmingham. Messrs. Bateman and Drury are appointed the architects. — *Id.*

Shakspeare's Monument, and the Chancel of Stratford Church. — The "Warwickshire," in conjunction with the "London Committee," appointed to preserve the monument of Shakspeare, and to repair and restore the chancel of Stratford church, propose to make a new inner roof to the chancel, in a style and character to harmonise with the windows and architectural features of that beautiful edifice. In accordance with a system which prevailed in "the olden times," when churches, chantries, towers, and chancels were frequently built, and sumptuously enriched with painted glass, and with armorial shields and insignia on the roofs, friezes, and other parts of the said sacred works, at the cost of different lay and secular persons, it is proposed to adorn the new ceiling of Stratford chancel with the arms of such noblemen and gentlemen of the county as may wish to have their family emblazonments thus recorded, and placed in a most interesting building, and in immediate association with the most eminent poet of the world. As it is intended to make a richly ornamented ceiling, with principal and smaller ribs, having either bosses or shields at their intersections, there will be a favourable opportunity to introduce the latter; and, when properly emblazoned, they will materially contribute to the beauty of this unique chancel. They will likewise be strictly harmonious; for some of our cathedral and other churches are richly studded with such family memorials and chivalric garniture. The prices for such armorial shields will be from five to twenty guineas, according to their sizes and the quantity of work. From fifty to one hundred shields can be introduced. — *J. B., in a printed Prospectus, dated April* 23. 1836.

YORKSHIRE. — *York.* —York Minster is undergoing a slow repair: some parts are being rebuilt, and other parts refaced with stone: the whole is being very creditably done. — *Id.*

The York Union and the City and County Banks, forming, with about eleven other houses, the south-west side of Parliament Street, now called the New Market, are just being finished. The City and County Bank, which is in the Grecian style of architecture, has its front and side faced with stone. The ground story is rusticated, and over it are six Grecian Doric pilasters (two stories in height), supporting a regular architrave, frieze, and cornice, with blocking course over it. This building, with the York Union Bank (which is also faced with stone), and the houses between them, forms a very elegant addition to the buildings in the city of York.

A New news-room has recently been completed in St. Leonard's Place, to which it is contemplated that the news-room establishment, now accommodated under the subscription library, may be removed.

A preparatory School is to be immediately erected in the city of York, for the general education of youth. The sum required to carry the project into execution is 8000*l.*, which is to be raised by shares of 25*l.* each.

The York Union Gas Work Company has purchased a spacious piece of land of Mr. Thomas Arthur, situated on the banks of the Foss, in Foss Lane, in this city, for the purpose of erecting the necessary buildings, &c., for accomplishing the objects of this undertaking. The ground has already been bored, and it was found to be of a good clay bottom. — *W. C. G.*

Beverly. — Beverly Minster, which, in size, is not to be compared with that of York, is also being repaired, under the direction of Mr. Cummins of Beverly, and in a very satisfactory manner: the workmen employed seem to be proceeding with it much faster than those at York. The stone used for the facing is from Bromley Moor, near Tadcaster. A very general method of repairing and cleansing cathedrals and churches has been adopted in the Minster at Beverly; and that is, of laying on the walls in the interior a thick colour, which certainly gives them a cleanly appearance, but, at the same time, so hides the various ornaments, as to make them completely undiscernible. — *Id.*

Sheffield. — *The Cemetery in Sharrow Vale.* — I have very recently visited the cemetery at the entrance into Sharrow Vale, a place peculiarly dedicated to the dead, and, at the same time, a beautiful resort for the living. In the site of this establishment judgment and taste are equally conspicuous: it is within a mile of St. Paul's Church; on the immediate verge of the town, and approachable by an excellent road; the slope of ground it occupies is between five and six acres, and it commands a horizon of as many miles. Directly on passing the lodge (a handsome stone building in the Doric style, at the foot of the hill), a broad gravel walk leads to the lower range of vaults, in the front of which there is a pleasant grassy lawn by the side of the river Porter, which is here thickly shadowed over with oak, and ash, and elder. Parallel with these vaults, and forming a stage above them, a long-continued series of catacombs, surmounted by a parapet, ornamented with Egyptian balustrades, sweeps with graceful curvature along the next elevation. This parapet divides the lower from the upper grounds, and forms a barrier on the left of the carriage road in its ascent from the lodge to the chapel, a very handsome and substantial edifice in the Doric order, with a portico of fluted columns and a pediment in the front. The interior of this chapel is more than sufficiently capacious for the performance of the solemn rites of burial; and, if not spoiled by a desire of doing too much, it will be a neat and pretty structure, and exactly fitted for the purpose for which it is designed. It is now, however, in an unfinished state, and, therefore, not a proper subject for critical remark. Immediately behind the chapel there is a deep excavation, which, if properly managed, may be made a beautiful dell; one side is occupied by a range of vaults, the other is now a naked perpendicular rock, which, when adorned with ivy, foxglove, and tufts of heath, with healthful foliage at the base and along the summit, may be rendered sufficiently picturesque to be a pleasing feature in the scenery of this cemetery. From the chapel an ascending walk leads to the minister's house, an elegant stone building, *not entirely Doric*, which is situated in the higher part of the grounds; and here, directly in front of this delightful residence, let the visitor pause and gaze around him. The descending foreground is here well wooded, and the eye glides over the tops of the trees to the opposing slope beyond. The first object presented is the Collegiate School, a neat building, newly erected, in the Tudor Gothic style of architecture; a little on the right, finely embosomed in trees, is Broomhall, formerly the residence of the Rev. James Wilkinson, vicar of Sheffield; a man who, as a magistrate, a neighbour, and a minister of the Gospel, has had but few equals any where; and still more to the left, are the Horticultural Gardens, the pride of Sharrow Vale, and the boast of the town; the Swiss cottage among the trees, the splendid conservatory with its three glass domes beyond, the noble Doric entrance on the right, and the curator's house on the left, all surrounded with floral beauty, together with the fine foliage about Broomhill, and backed with the grand imposing range of buildings on Mount Pleasant, and the woody screen above Pisgah, constitute a picture of uncommon richness in objects and rare in beauty. These two establishments, the

Cemetery and the Horticultural Gardens, appear as if they had been formed to suit each other by a reciprocity and interchange of their own peculiar attractions: they both bestow and receive advantages from the situations they occupy; they thus serve each other, and the benefit is mutual. Where the artificial adornments of Sharrow Vale terminate, a country of great sylvan beauty succeeds, which is continued along the line of the river Porter, from Brocco Bank Wood and Endcliffe on one side, and Greystones on the other, to the moorland wastes that border the mountainous districts of Derbyshire.

Mr. S. Worth, to whom the direction and management of this place has been confided, has displayed both taste and judgment in the general disposition of the grounds; and the architectural structures with which they are adorned are alike creditable to his talents. He has made this cemetery a delightful spot for the living, and a safe depository for the dead.

But, notwithstanding the excellence of his contrivances, the architect of this establishment must submit to be told, that his designs here are not entirely faultless: in other words, the different parts do not all harmonise with each other. It may, therefore, be worth while to enquire to what extent the established rules and requirements of art have been violated or trespassed upon on this occasion. The ornamental gates leading from the Eccleshall road to the entrance into the grounds indicate, as they ought to do, the general style that should pervade the whole place; which the architect evidently intended to be Egyptian, as the two needles, or obelisks, sufficiently denote. To this novelty it may be objected, that they are too diminutive; and, farther, that as ornaments they should never be used in *pairs*. The obelisk should always stand alone; and its most legitimate use is, to mark the termination of an avenue or vista. This *Egyptian* gateway leads to the entrance lodge, which is a *Doric* structure; passing the lodge, the vaults, and the balustrades that crown the upper tier, are decidedly Egyptian; so is the flight of steps that ascends to the front of the chapel, a purely Doric temple in style and form, with an Egyptian door and windows; the minister's house above is likewise in the Doric style, and the two entrances above are Egyptian. Yet, after all, I know not that these innovations may not be defended against a whole host of cavillers. If the architect of the present day is to be fettered, and manacled, and bound down by the arbitrary rules and requirements of more than two thousand years ago, what defence can be set up for the liberties so freely taken by the celebrated Mr. Nash, to whose admirers I leave the vindication of the designer of the Sheffield Cemetery, which, with all its faults, Mr. Worth may justly be proud of. It is indisputably one of the most beautiful establishments of the kind in the kingdom. Some of its principal attractions are, no doubt, attributable to the situation so happily chosen by the committee; but the many advantages it presented have been made available by the skill and taste of the architect. And yet, although much has been done, something still remains to do; sculptured vases, which may be had in artificial stone, at but little cost, and occasionally a funeral urn, with an appropriate pedestal, might be advantageously introduced into these grounds; they would greatly improve the effect of the whole, and impart to it a more splendid and a more classic character. Within the narrow confines of this hallowed dormitory, more than two hundred and fifty catacombs have been prepared for the reception of the dead.

There are now but few establishments of this description in the kingdom; their number, however, cannot fail to be greatly increased, as the practice of burial within the streets of a crowded population is now almost universally condemned. Such a practice is not only noxious in its effects upon the living, but it leads to indecent and revolting outrages, at which humanity shudders. The good sense and correct feeling of the present generation will, it may be hoped, reform this evil altogether. (*Sheffield Mercury*, Aug. 27. 1836.)

SCOTLAND.

A Highland Hut. — I shall now describe a hut, such as I have seen inhabited by strong, healthy, and, to all appearance, contented people; and, in doing so, I would express my hope and belief that such dwellings in the Highlands must soon take their place amongst the things that have been; the means being now in progress that soon must assimilate them with their southern neighbours. The Highland proprietors are now letting their farms to south country farmers, who take with them male and female servants; and these persons intermarrying with the natives, thus disseminate a taste for comforts not previously thought of. *Infant schools* have also been established in many of the towns, and patronised by the gentry; which, in conjunction with the great number of tourists, who, since the formation of good roads, annually circulate large sums of money among the innkeepers and others, promise fair to bring about a salutary change.

A Highland hut is composed of a wall of turf, or turf and stone, in alternate courses, which is carried up to the height of between 5 ft. and 6 ft. This wall is of great thickness, and tapers on the outside from the bottom to the top. The doorway is low, and the door made of wickerwork; or, if of wood, it is of the rudest description. An apology for a window is formed by a square hole about 1 ft. in diameter, with a wooden or wicker door, to shut at pleasure; or sometimes of fixed spars, 1 in. or 2 in. apart, having movable spars, corresponding to the intervals, which move in grooves, and can be shut when it may be desired. The roof is constructed by placing two trees, naturally inclined; so that, when the root end rests at the base of the wall, their tops meet; and, when such as are naturally inclined cannot be had, the same result is produced by joining at the proper height a suitable piece. These couples are joined together by tie-beams, and to the other couples by small trees or split trees, the whole being made fast by wooden pegs. On this the roof, which is composed of turf and heather, or turf and broom, is laid, and, when well executed, effectually guards the inmates from wet or cold. On entering one of these huts, you generally have to traverse the breadth of the building behind an outer wall, and then you find another doorway, every precaution being taken to shut out the air. As there is no chimney, the smoke from the peat fire on the hearth, after filling the upper part of the hut, finds egress by holes in the roof as well as by the window-hole and doorway. The sleeping-places are placed beside the wall in the same apartment. — *G. M. E.*

Norwegian Cottages, as compared with those of Scotland. — The sense of comfort, cleanliness, and order in domestic concerns appears to me more generally developed among the working class of Norway than in Scotland. The wooden floors and side walls, the abundance of glass windows in the meanest habitations, and the outside store-rooms and accommodations, distinct from the dwelling apartments, keep the inmates, and especially the females, and their habits of living, in a much more cleanly and orderly state than it is possible for those of the same class in Scotland to enjoy; with their earthen floors and roofs and side walls, their single pane of glass window, and their single room for all ages and sexes, to cook, and eat, and sleep in, and to hold all the clothes and stores of the family. (*Laing's Norway.*)

New Lamp for Railways. — There has been lately erected by the active manager of the Railway Company (who has also the merit of the discovery), at the head of the inclined plane in St. Leonard's Depot, a lamp of a new and admirable construction, which describes a circle of light of about 30 ft. in diameter, of the apparent intensity of sunshine, showing the objects within its sphere as distinctly as those on the table of a camera obscura. The object which the manager had in view was, to enable the engine-men to have a distinct view of the working of the inclined plane ropes during night; and this has been fully attained. The lamp consists of an argand burner placed in the focus of a large speculum of a peculiar form, by which the whole light is distributed just on the space where it is required. It is computed that the light on the above space is equal to that of twenty-five to thirty similar burners in common lamps. We are told Mr. Rankine's name for it is the conoidal lamp, probably because the light is thrown from it in the form of a cone. A lamp of this kind might, we have no doubt, be useful for other purposes: it appears to us that the largest assembly room might be brilliantly lighted by one placed at each end of the room; and one would be sufficient to light the stage of a theatre. The cost of this one is said to have been about 20*l.*; but we understand it saves an annual expense of nearly half that sum. (*Scotsman*, Feb. 29. 1836.)

LANARKSHIRE. — *Glasgow.* — The highest chimney shaft in Scotland was finished last week at the Springfield Works, in this neighbourhood, the extreme height being 232 ft. It forms a very fine object from the Glasgow Bridge. (*Glasgow Courier*, Oct. 1836.)

Superiority of low Chimney Shafts properly constructed, over tall Chimney Shafs constructed in the usual Manner. — A discovery has been made in chimney-building which is likely to put a stop to the building of lofty pillars, for the purpose of carrying away engine smoke from manufactories. The only scientific reason assigned for building these lofty shafts is, that the increased height gives an amazingly increased draught. But it was found that a chimney of the ordinary height, or, at most, 60 ft. or 70 ft., which is so constructed as to have the inside of the flue narrowest at the bottom, and gradually widening as it ascends, has the effect of increasing the draught and burning the smoke in a much greater degree than is produced by a tall flue on the old principle. A chimney built on the new principle has the appearance outwardly of a tower, as it stands upon a large base, and carries its width on the outside to the very top. The cost is not one third of that of one of the tallest chimneys; and the danger from falling is comparatively small. Messrs. Clarke, cotton-spinners, in Glasgow, have completely proved the superiority of the new system, having recently built a chimney on that principle, about 70 ft. high. (*Carlisle Patriot*, Jan. 1837.)

PERTHSHIRE. — *Perth.* — The foundation-stone of the City and County Infirmary was laid on October 5. 1836, with masonic honours, the members of several lodges being present. The architect is our esteemed correspondent, W. M. Mackenzie. (*Perth Constitutional*, Oct. 8. 1836.)

IRELAND.

DUBLIN. *The Beau Ideal of a comfortable House.* — I have some thoughts of building myself a new house in the county of Wicklow, near Rosemount, looking down on the sea on one side, and the "meeting of the waters," on the other; a situation which I think is unparalleled in beauty in any part of the neighbourhood of Dublin. I have the vanity to think that I could lay out the interior of a dwelling-house on better principles than have yet been followed here at least. I do not propose to do anything out of the usual routine observed in the best houses, in respect to finishings or ornamental work; but I shall endeavour to distribute it so as to avoid all lath and standard partitions, and to render it as nearly fire-proof as circumstances will permit. I intend, likewise, to have a thorough system of ventilation in all the principal rooms, by providing for the ascent of the heated air from lamps, &c., into the spaces between the ceilings, the deafening of the floors above, and its escape from these receptacles by flues, made of light earthenware, to be built into the gables (nearly in contact with the strong fire-clay tubes which will form the smoke flues), and continued upwards until they reach the height of the vacant space between the ceilings of the attics and the boarding of the slates, where the hot air will be discharged, and will find its way out through the slating. The object of not continuing these foul-air flues to the summits of the chimney-stacks being to avoid the chance of smoke or soot ever being drawn down by a reverse current.

In order to provide a supply of air for this ventilation, and to prevent it from affecting the current required for the fireplaces, I shall have a large aperture on each front of the house (about 2 ft. square or 4 ft. of area) in the basement story (which the nature of the ground makes 20 ft. below the dining-room floor). The air, flowing in by one or other of these openings, will pass into the well of the staircase, but, in its way, will have to brush over a heated surface of about 70 ft. of area, by which it will acquire a temperature sufficiently high (under 60° Fahr.) to render the whole interior comfortable, leaving but little to be done by the fires in the rooms, and thereby much reducing the quantity of fuel to be brought into them, and the consequent dust and ashes to be removed from them. The cornice over each door will conceal an opening, 3 in. or 4 in. wide, along its entire width, by which the air required for the current of the fireplace and for the foul-air flue will be plentifully supplied from the great reservoir, the staircase.

The site on which I think of building is on a crescent-formed rock, of small radius; consequently the house will be much wider at the back than in the entrance front (area 32 ft. front, 52 ft. deep, 40 ft. back front). You are aware that in such houses the dining-room is generally parallel to the gable, and the principal drawingroom to the front, taking in all the three windows. The consequence of this distribution is, that the partition separating the principal from the second drawingroom crosses the ceiling of the dining-room; and must either be made of lath and standards, or, if of brick, there must be an iron beam to support it. In the first case, a dangerous communication for fire up to the very roof is established in the heart of the house (as I have seen in several recent cases of fires); and, in the other, the danger is hardly diminished, when the floor is allowed to communicate with or touch the iron beam, as the constant vibration in which the floor is kept by the movement of the inhabitants must be conveyed, in some small degree, to the beam and its load; and, unless it be of excessive and needless strength, may at last overcome it. An eminent Dublin architect was obliged, some timo ago, in erecting a public building, to carry two brick partitions across the ceiling of the largest room. He did this on well-made cast-iron beams, of very moderate scantlings; but he took the precaution of insulating them so completely from any connexion with the floors, that no tremour is excited in the partitions by any movement on the floors. I shall adopt this scientific precaution, if I determine on dividing the drawingroom floor into three spaces; but, as the area is so considerable, I shall probably make a suite of four rooms, connected by folding-doors, which distribution will enable me to carry up stone or brick walls all the way from the foundations to the roof.

You will, no doubt, be pleased to hear that more than a year's experience of my gas kitchen has only confirmed us all in our liking of it. By means of it and the ventilating chimneys, every thing goes on pleasantly, even when a large dinner is in preparation; as there is no perceptible difference in other parts of the house, when such things are going on below. The fire is applied to the pots only, and not to roasting the cook. I believe there is only another person in Dublin who employs gas in cookery besides myself.

I have lately been trying an experiment, with the aid of Mr. ——. I have in my present house a room of 28 ft. long, lighted by one window at the end: it was lined with crimson flock paper, and was, consequently, very sombre in the daytime, and, in consequence, was seldom used but at night, when it could be lighted up. I got Mr. —— to strip it, and to paint the walls of a very tender fawn colour, hardly off white: this is grained like morocco leather, and a pattern of gold rosettes laid on it, with a thin coat of copal varnish over all, which dims the gold a little, and gives a delicate gloss to the whole. The ceiling and woodwork are done in dead white, of the strictest purity; and such parts of the mouldings *as reflect light* are gilded: the other parts are left white, as gilding which does not reflect to the eye appears as a black line. The effect of this room is even better than I anticipated. When the carpet is up, and it is lighted for a ball, it is particularly cheerful. I should have mentioned that the floor is painted in flat white, with a border like the work on the walls. The chimney mirror is sunk in the wall, in a frame of white marble.

I fear I may tire you by such *bavardâge;* but, as I know you have rational improvements in dwellinghouses very much at heart, I hope you may not think the time required to read this letter altogether thrown away. — *J. M. Dublin, Dec.* 11. 1836.

ART. II. *Retrospective Criticism.*

ERRATA.—In Mr. Bland's " Essay on the Principles of Construction, &c.," in Vol. III. p. 506. line 1., for " Loore " read Loose; " and in the same Essay, p. 511. line 12., for " until they meet at *a b*," read " until they meet at *l*."

Collie's Cathedral of Glasgow. (Vol. III. p. 522.) — I think you have hardly awarded to Mr. Collie all the praise which his highly interesting, useful, and laborious work merits. It is one of the most useful works on Gothic architecture that I have seen; and Mr. Collie appears to have entered into his task with a feeling far beyond the ordinary one of pounds, shillings, and pence. The specimens are drawn to such a scale as will give the student an opportunity of seeing by what means the architects of the middle ages produced their effects; and the views, which are drawn in a most spirited and masterly manner, are beautiful illustrations of their science. — *E. B. L. London, November* 6.

Mr. Griffith's Chapel. (Vol. III. p. 562.) — What, more temples! another cast from the same mould! It is really surprising, in spite of the evident progress the art of design has made within a very few years, that any one professing to call himself an architect should do nothing but copy. Beautiful as the temple on the Ilyssus is, it ceases to please when in every street, nay in every part of the country where new buildings are erecting, from the church to the gin palace, from the mansion to the humble (as it ought to be) cottage, from the assembly house to the prison, we find the same temple; varied, certainly, in its dimensions, but the always-to-be-used four columns, entablature, and pediment, whether the pediment is the termination to the roof, or merely abuts against the wall, which sometimes necessarily continues over it. Now, we have it for the thousandth time applied to a chapel; a mere copy in all its details, except the fluting to the columns, from the steps to the top of the pediment; and called a design for a cemetery chapel; while, if the architect had gone to a print-seller's, and got the leaf out of Stuart's *Athens*, he might have been saved the trouble of drawing. This is the very mockery of architecture; this is not the noble art that calls forth the greatest energies of the mind; this is not the result of contemplation and unremitting study! And look at the elevations, with the additions required to form a chapel: a clock in the tympanum! without the least decoration; and a belfry riding astride the roof! But the artist must have been aware of these latter defects in his design; for he says, modestly enough, that, " if introducing the clock and belfry in the principal front should be supposed to interfere with the beauty of the portico, they can be placed in the back front of the chapel." This reminds me of the modesty of a sculptor who was called upon to restore the arm of Venus. When he was prepared to unite the severed limb, he was so overpowered by the exquisite beauty and elegance of the goddess, that he laid the new member at her feet in despair, as he felt that all his skill could not bear the least approximation to so wonderful a work of art. — *Zero. London, Dec.* 1836.

Lamb's Villa. (Vol. III. p. 456. and p. 584.) — Mr. Tate's remarks on my villa (Vol. III. p. 584.) can hardly be called criticism, as he has evidently made up his mind to what he considers a mistake, without sufficiently examining the plan. If he looks at it again, he will find three steps up to the level of the floor of the porch, besides one to the entrance of the hall; and *only one* to the back entrance to the kitchen, &c.; so that there must be a descent to the kitchen by the study door of three steps; which, coming exactly under the steps to the second landing, could not be shown in the plan. Now, the nine risers from the hall are each 7½ in. high, which will give from the hall floor

5 ft. 5¼ in. to the first landing; and, as there are four risers to the second landing, 2 ft. 5 in. more will be gained; so that there will be 7 ft. 10¼ in. to the second landing from the hall floor; and, as there will be three risers, or 1 ft. 9¾ in. from the floor of the kitchen passage to the hall floor, which, added to 5 ft. 5¼ in., after having deducted 8 in. for the thickness of the bearers of the first landing, will give 6 ft. 7 in. clear headway; so it must be obvious, that, if persons who have occasion to go through this passage are not of an extraordinary height, 6 ft. 7 in. will be sufficient headway. I am quite sure that Mr. Tate would not have made the remark he has done had he entered the house at the porch *steps*, and left it at the back *step*. By merely passing through in that way, he would have found it necessary to descend three steps to the kitchen passage. I think this explanation will satisfy Mr. Tate, without the necessity of a section. But, in some future Number of the *Architectural Magazine*, I purpose giving some views of interiors of halls and staircases, and showing how their character may be improved by very little extra expense than in the present commonplace manner. The scale to the design in question is 10 ft. to half an inch. — *E. B. Lamb. 25. Henrietta Street, Brunswick Square, December* 2, 1836.

G. B. W.'s Truss. (Vol. III. p. 285.)—I have hitherto been prevented from answering Mr. Coles's second article upon my design for a truss. I regret this the less as I hope that, after so long an interval, he cannot suppose I now write either "in *haste*" or "in *anger*." Before I proceed further, I must appeal against the manner in which he garbles my sentences. He says, "G. B. W. tells you he writes in haste," &c. Now, my words were, "I hasten to reply;" which, I am sure, you will admit is very different to writing in haste, or in a hurry. Mr. Coles's attempt to be facetious about a "truss of haste and anger" must, therefore, fall to the ground. As to anger, I assure you and him that I felt none; but a part of his communication, to which I shall presently draw your attention, warrants the supposition that it was he who wrote under a feeling of irritation. Mr. Coles thus proceeds: — "Why, he coolly says" (accusing me, in one breath, of writing both *in anger* and *coolly!*), "if the span were less, it (the lower king-post) might be dispensed with entirely." Certainly I do; for the principal rafters and straining-beam form the same species of abutment truss which he lauds so much in the Drury Lane roof; and in this consists the similitude between the two trusses, which he and Mr. Cook find it so difficult to discover. In Mr. Coles's own design, the truss is much more dependent upon the queens than mine is; and there is the same "want of continuation in the principal rafters" which Mr. Coles's "able" ally Mr. Cook complains of in mine! Mr. Coles then states that he "has turned to Nicholson's *Carpentry*, according to the *friendly* advice of G. B. W." (a sneer which to me is perfectly incomprehensible and pointless); and that he has there discovered a truss in *principle* precisely the same as mine; "*only* there the queens derive the whole of their support from the king, instead, as in G. B. W.'s design, the king from the queens;" and to this he refers me. I have examined it, but do *not* consider the principle similar to mine; as the rafters are in one length, and there is no straining-beam. The merit, too (if merit there is), of this truss does not belong to "our good friend Nicholson," but to Batty Langley; as Mr. Coles will see by turning to his *Builder's Jewel* (published in 1741), in which is a fac-simile of the design alluded to. It is scarcely worth while to comment upon Mr. Coles's concluding sentence; for your readers have only to turn to Mr. Cook's article, and they will see that what Mr. Coles takes the liberty of putting into Mr. Cook's mouth is purely an invention of his own; and, were I as ignorant as he would make me out, my design would not have obtained the conspicuous place which you, Sir, were pleased to assign to it in the *Architectural Magazine;* nor would it have called forth the erudite critiques of your "able" and "experienced" correspondents.

I shall be glad to learn from Messrs. Cook and Coles whether they consider the *scarfing*, which they have condescended to borrow from the design of one "who knows nothing at all about a truss," is as faulty as the rest of that design? I did hope that I was entitled to the merit of this, at least; but, alas! I suppose that the "experience of many years' practice" must have suggested it to the one, and that it must have occurred to the other "some few years ago!" And, as I am "not acquainted with the construction of roofs on a large span," perhaps Mr. Cook will enlighten me (and such of your readers as may be in the same unhappy state of ignorance) upon a few points which he appears to consider as too commonly understood to require explanation. Will he furnish some description of his "cast-iron chairs," and state what advantages may be derived from their use, and why they are better than stone corbels? Also, whether he considers 10 ft. by 3½ in. "a proper scantling for struts to a roof of such large dimensions? And, perhaps, Mr. Coles will give your readers the information as to the scantlings of his truss, which I required of him nine or ten months ago?

In conclusion, I must say that I do not think I have been fairly treated by your correspondents: I sent my design on account of the *principle*, and not the *details* of its construction. I did not send the drawing to you, as I should have done to a workman, with every point studied, and every trifling timber in its exact position. Had I wished to do so, the scale to which it was drawn, and the small space afforded by your pages, would have precluded the possibility of its being effected; and I may add, that the designs of Messrs. Cook and Coles would by no means stand a minute criticism in that respect.

I should not have written at so great a length, had not the unpleasant tone of Mr. Coles's article called for an answer from me; but I trust that he already regrets having made a statement which he is utterly unable to support. — *G. B. W. London, November* 28.

*Whiting's** *Patent Sashes.* (Vol. III. p. 96.)—Your correspondent A. W. S. very justly complains of the annoyance occasioned by the rattling of the sashes, which prevails more or less in most houses with sash windows; in the majority of these cases, the cause I take to be (with all due deference to the opinion of Mr. Medcalf, Vol. III. p. 238.) the inferiority of the materials of which they and the frames are composed. Mr. Medcalf's remarks are very good; but, were the directions therein given to be fulfilled to the very letter, in preparing an ordinary cased sash-frame and pair of sashes with unseasoned materials, and they were to be fixed and made to act in the spring of the year, I am disposed to think they would, at the end of the following summer, evince pretty strong symptoms of rattling: indeed, I do not see how it could be otherwise, taking into consideration the number of divisions, or alternate substance and space, of the same material comprising them, and the exposed situation in which they are fixed. I have seen a specimen of "*Whiting's patent sashes and frame*" at the house of his agent here, which appear to me to be well adapted for avoiding the above-named annoyance, and require only to be better known to insure their more extensive use. The frames are of solid deal, in which are square sinkings for the reception of the leaden weights; over these are fixed beaded linings, which also conceal the lines, and form small grooves to receive the metal tongues, fixed in the styles of the sashes: a metal tongue is fixed in the head, and another in the sill of the frame, catching the top and bottom rails when the sashes are shut; the meetings are beveled, and fastened with a common brass sash-fastener. The whole forming a very compact air and water tight window. — *Z. Hertford, Nov.* 9.

A Plan by which the Lines, &c., of hung Window-shutters may be concealed. (See Vol. III. p. 192.) — A friend of mine, a few years back, executed a plan which perfectly succeeded in producing the above effect. The shutters are made in two heights, hung as mentioned by Eboracum; and they slide down into a case, the side of which is formed by the window front. This case is closed at top by a flap, hinged on the outer edge, which conceals the shutters when they are down, and supports them when they are up. There are similar flaps to cover the pulley-styles and lines; but they are hinged on the inner edge, and they unite with the architrave, and effectually hide the lines, and keep the first-mentioned flap in its place when the shutters are down. These flaps are thrown back, when the shutters are up, between them and the sash bead of the window; sufficient space to allow of this being left between it and the inner edge of the horizontal flap. — *R. V. Ilminster, July*, 1836.

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* —— Whiting, Esq., architect and county surveyor, Ipswich.

Polychromic Architecture.—In the advertising sheet of your November Number, there is a paragraph directing attention to this mode of decorating buildings; I should not be surprised to see it adopted on the fronts of some of our street houses. I should, however, be sorry to see a gin palace decorated *polychromatically*, as it would damn the subject at once; but I should really like to see one of our first-rate shops, in one of the public thoroughfares, decorated in that style; but it must be by a man of refined judgment and sound taste. I am convinced it would answer well. The public would, at first, be offended, perhaps, by the novelty; but it would be a lesson of taste to all, and time would do much to reconcile at first, and then to approve, the now strange attempt. At Paris the shops are, I understand, fitted up with the most exquisite taste; the walls covered with the most delightful painting, and medallions interspersed, well worthy preserving in a cabinet; and all this with a refinement and judicious selection, proving that the employers themselves have the judgment to choose the first artists, and to leave themselves to be directed by their taste; not employing, as they do here, any one, whether carpenter, upholsterer, or modeller, or what not, but the first-rate men, and paying them well. The Parisian citizens will lay out thousands of francs in the mere decoration of a shop. Gau of Paris has fitted up, years since, a coffee-house, in the Pompeian style, in a mode quite equal to that of the ancients. Here, we have nothing of the sort, except a vestibule to the house No. 33. Russell Square, belonging to M. Mocatta, which was tinted *à la Pompeiana* by his son, when he returned from abroad, some years since, with his eye fresh from the contemplation of those extraordinary works of antique art. — *S. T. W. London, November*, 1836.

Mr. Sopwith on the Principles of Design. (Vol. III. p. 394.) — Concurring with Mr. Sopwith, in his opinion, that " the first and most universal objects in architectural design are fitness and economy (these, in their true sense, are essential to every work of contrivance), and that, if not accomplished, they always are, or ought to be, attempted," I feel sorry to say that I have met with many instances of these essential qualities being neglected; one of which now forcibly occurs to me, and which I will mention. About seven miles from Dublin, there is a fast rising town, called Kingstown, where (as I go along, I may remark) your talented correspondent Mr. Mallet is erecting a very large crane. At this place there is now in progress of erection a building designed for, and intended to be designated, a " Mariner's Church." Now, whether we look at the exterior, or view the interior, of this edifice, we find it extremely difficult to trace any connexion between its name and its appearance. Fitness and economy are here alike laid aside; and, though its appellation is to be the " Mariner's Church," yet it would seem, both from its external appearance, and its internal arrangement, that no mariners were expected to come here, but those distinguished by their epaulets, or such like marks of honour and dignity, and whom, it might be supposed, had learned how to conduct themselves on a cushioned seat, with arm-rests; as, strange to say, it is intended to divide each pew into single sittings, each sitting to have on either side rests for the arms); but, assuredly, it is not intended for those accustomed to the rough toil of a sailor's life. Not one of that class could feel himself comfortable in such a church, but, on the contrary, he would be led to think himself an intruder. I should, however, remark that my judgment has been formed from the plans, &c.; for the principle of economy has been so despised and neglected, as to prevent the edifice having the appearance of making rapid progress towards completion. Should it be finished as it has been designed, it will be costly far beyond its character; but I do not think that it is at all probable it will be finished: should it so happen, I am confident that its erection, if persevered in as at present designed, must inevitably entail very heavy debts on those who shall come after its present projectors. — *G. P. Dublin, October* 10. 1836.

We shall be happy to receive the drawing offered to us by this correspondent. — *Cond.*

On the Construction of Oblique Arches. (See Vol. III. p. 251.) — A letter on this subject by Henry Welch, Esq., of Elswick Villa, Newcastle, surveyor of the county bridges of Northumberland, addressed to Peter Nicholson, Esq., of Newcastle, has been published in the *Newcastle Journal* of Nov. 19. 1836. This letter has been copied into the *Phil. Mag.* for Jan. 1837, from which it appears that Mr. Fox is not the inventor of the "proper and certain rule" for the formation of the stones for building oblique arches, but Mr. Nicholson. Mr. Welch says, "I deem it right to state, that in your book on Masonry and Stone-cutting, published in 1828, there is an elaborate illustration for the working of the spiral, or twist, upon the stones; and the explanation is so clear, that Mr. James Hogg, operative mason, residing at Brandling Place, Newcastle, has certified that, in 1834, he built an oblique arch entirely from the instructions which are given in your book; and so certain did I feel of the practicability of your rule, that I have adopted it upon the river Coquet, at Felton. The chord of the arch being 33 ft., and the angle of obliquity 19°; and in which case the stones were cut, or dressed, previously to the erection of the centre. Having received your approval of the arch, as being in accordance with your design, I think there can be no doubt that your claim to the rule for the proper formation of the stones is prior to that of Mr. Fox; and I have yet to learn that any rule exists by which the oblique arch can be so truly built as the one which you have published."

ART. III. *Queries and Answers.*

A Design for a new Town Hall wanted for a Borough Town. — In your *Architectural Magazine* I observe the laudable spirit of emulation fast growing among the aspirants for architectural fame; and many gratuitous contributions of plans which adorn your pages: from which, it seems to me, it would not be objected to if I were to propose a subject for your contributors to exercise their talents upon. In a small but ancient borough town, now rapidly improving, the old town hall is so far decayed as to be considered not worth repairing: a new one is desired, to consist of a room about 40 ft. by 25 ft., with a window at one end wide enough to allow parliamentary candidates, their proposers, and seconders, to appear at before the constituency. This room is to be raised on arches, and the spaces fenced with iron rails; the ground floor to be a market-house, which might be extended by sheds, the cost to be about 800*l.* — *G. R. Flintshire, Nov.* 19. 1836.

ART. IV. *Institute of British Architects.*

December 19. 1836. — C. Barry, Esq., V. P., in the chair. The minutes of the last meeting were read. The balance in the treasurer's hands appeared to be 144*l.* 18*s.* 7*d.*

Elected. The following gentlemen were balloted for and duly elected. As Associates: W. Richardson, Architect, York; and T. Hayes, Architect, 7. St. George's Terrace, Hyde Park. As Fellow: W. C. Lochner, Architect, Albion Place, London Wall.

Presented. Parts 2. and 3. of Jones's Alhambra, printed in colours, and with gold, from Owen Jones, Esq. Ives's Remarks upon the Garianonum of the Romans, two Roman tiles taken from old halls, and a copy of Thompson's Design for the new Houses of Parliament, from Mr. P. Thompson.

Essai historique sur le Pont de Rialto, par M. Rondelet, Architect, from M. Baillière, for the author. On the Construction of Theatres, &c., from Dr. Bromel. Evidence relating to the Art of Engraving, taken before a select Committee of the House of Commons, from J. Pye, Esq. Fragment of a tile taken from the chancel of the church at Hadzor, near Droitwitch, from M. Habershon, Esq. Fragments of tiles from the Church of St. Peter's at St. Albans, from J. B. Gardiner, Fellow. L'Architecture Moderne de la Sicile, folio; Les Antiquités inédites de l'Attique, folio; and Recueil des Décorations executées d'après les Dessins de J. Hittorf et Lecointe, Architectes, pour le Batême de S. A. R. le Duc de Bordeaux, folio; from M. Hittorf. Dallaway's Discourse upon Gothic Architecture, from P. F. Robinson, V. P. Various specimens of marble from near Haverford West, from H. L. Keys, Fellow.

Read. A paper giving an account of an Imitation of Black Marble, invented by Mr. R. Davies of Newcastle, accompanied by specimens. A paper by J. Britton, Esq., on the Application of the Style and Character of Monastic Architecture to modern Mansions, &c., which will be given below.

Letters. Presentation of the Sums received by several Architects for their Designs for the new Houses of Parliament to the Institute. From Robert Wallace, Esq., to T. L. Donaldson and Charles Fowler, Esqrs.—Dear Sirs, I have the satisfaction to acquaint you that I have this day paid into the hands of the treasurer of the I. B. A. the sum of 65*l*., being the joint donation to the Institute (for the special purposes hereafter to be determined) of the under-mentioned members, each of whom has contributed his proportion of the profits arising from the exhibition of the Designs for the Parliamentary Edifices. Trusting that other members will follow the example thus set, I, remain, &c.—*Robert Wallace.* 41. *Parliament Street, Sept.* 8. 1836.

Contributors. S. Angell, Esq., Fellow, 8*l*. 2*s*. 6*d*.; C. Barry, V. P., 8*l*. 2*s*. 6*d*.; J. Davis and F. Catherwood, Fellows, 8*l*. 2*s*. 6*d*.; T. S. Donaldson, Hon. Sec., 8*l*. 2*s*. 6*d*.; H. E. Goodridge, Fellow, 8*l*. 2*s*. 6*d*.; H. E. Kendal, and —— Hopkins, Esqrs., 8*l*. 2*s*. 6*d*.; A. Salvin, Esq., Fellow, 8*l*. 2*s*. 6*d*.; R. Wallace, Fellow, 8*l*. 2*s*. 6*d*.; W. Railton, 8*l* 2*s*. 6*d*.; P. F. Robinson, V. P., 8*l*. 2*s*. 6*d*.; W. D. Butler, Fellow, 8*l*. 2*s*. 6*d*.: Total, 89*l*. 7*s*. 6*d*. The contributors concurred in opinion that the above sum should be applied as part of the subscription fund for procuring a royal charter for the Institute.

T. L. Donaldson, Hon. Sec., explained some Geological Phenomena connected with the origin and sources of Porphyry, Sienite, Serpentine, and other rare Marbles used in architectural embellishment.—Adjourned to Monday, January 16. 1837.

Mr. Britton's Lecture on the Application of Monastic, or Christian, Architecture to modern Mansions; with Reference to, and a Description of, Toddington, the Seat of Charles Hanbury Tracey, Esq., M. P.— Mr. Britton commenced his essay by tracing the decline of monastic architecture on the dissolution of religious houses by Henry the Eighth, and the substitution of the Italian style by Holbein and John of Padua; and pursued the history of the art to the revival of Gothic in the reign of George the Third, under the auspices of Walpole, Warburton, Bentham, and others. From the absurd attempts at imitation by Walpole at Strawberry Hill, and by other amateurs of that time, he turned with congratulation to the greatly improved and extended knowledge of the style so preeminently manifested in the recent competition designs for the new Houses of Parliament. In the course of this short sketch, Mr. Britton ventured upon some severe but discriminating remarks on the works of Inigo Jones, Sir Christopher Wren, and the late Mr. Wyatt; and endeavoured (in contradiction to Mr. Hamilton and Mr. Wilkins) to defend the architecture of the middle ages, as being much more appropriate to this country, and to the wants of its inhabitants, than the classical pagan temple architecture of ancient Greece and Rome. The lecturer then proceeded to a minute description of the new house at Toddington, which excited much interest, as the work of an amateur architect; the whole having been designed and erected, during the last twelve years, by the talented proprietor of the manor. From the description of the vestibule, the cloister, the staircase, and the principal façades, we should imagine that this mansion must fully support the lecturer in his assertion of the improved taste, appreciation, and knowledge of the architecture of the middle ages at the present day. For a further and more particular illustration of this interesting building, we shall anxiously look forward to Mr. Britton's promised volume.

Art. V. *Architectural Society.*

The following address was delivered by the President, W. B. Clarke, Esq., at the opening meeting of the session 1836-7: — "Gentlemen, having been again honoured by you with the office of President, the duty of addressing you at the opening meeting of the sixth session devolves, I may say now say, by precedent upon me. Before entering, however, upon any topics which on such occasions may naturally present themselves to me, allow me to thank you for the honour you have again conferred upon me; an honour which, for your sakes, I could have wished conferred on one who would be of more weight with you by reason of his years, and more valuable to you on account of his profound knowledge of, and of his exquisite taste in, the profession to which we belong. If, in the sincerity of my heart, I give utterance to such thoughts and feelings, it is far from my wish that you should think that I slight the very distinguished honour which by your election you have conferred on me, for, on the contrary, I esteem it an honour; greater than I am well able to bear, as I now feel that you have become a Society of such vast importance to the junior members of the profession, that you require some distinguished professor of our science to give, not merely an importance by his name and station in society, but a sound and useful direction to your studies and to your tastes. I would not have you, or any one, infer by this suggestion of mine that the seed sown in this Society has been unprofitable: indeed, I need hardly appeal to you on this subject, as all who have attended the meetings of this Society must have felt that the sphere of their ideas and tastes on architecture has been considerably enlarged, and that they have acquired much architectural information from the institution of this Society; information which I will venture to affirm is far greater and more valuable than the scanty knowledge and meagre taste acquired in the generality of offices. By this observation I do not mean to depreciate the utility of a student entering the office of an architect, as the office is the only place in which the mechanical part of the profession, and business-like habits and method, can be acquired; yet I contend this to be the maximum of advantage to be derived from such a course of study. To obviate some of the disadvantages of the scanty architectural course of study adopted in England, the Architectural Society was instituted; and since its institution, as a proof that such a Society was necessary, another has sprung up, with views somewhat different from the Society which I have the honour of addressing, yet with views advantageous to science. It was hoped by some lovers of architecture, especially by that excellent veteran in the profession, Sir John Soane, that, for the advancement of professional knowledge and taste, a junction between the Societies should have been effected. I myself, for one, though in opposition to the expressed wishes of Sir John, think that such a junction, if it had taken place, would have been unfortunate, and the chief peculiar advantages which this Society holds out, namely, the cultivation of taste and of the art of design, would have been totally lost sight of. Because, be it observed, the other Society of which I speak touches only on scientific matters connected with construction, and is as limited in its views with regard to the beau ideal of architecture, as it is contracted in its constitution. For such reasons, I think it is fortunate that the valuable views of this Society, which has prospered and increased in importance since the year 1831, should not have been merged and lost sight of in the scientific pursuits of the British Institute; for, while I contend that construction can be better learned during the course of a year's attentive study in the workshops of great builders, than in ten or twelve annual meetings of any scientific society, architectural taste can only be acquired in a society of architects formed for that express purpose, and liberally carrying their views into practice; casting aside the professional jealousy which has been too often the bane of the artist, and the injury of that country for which his talents should be employed. Had this country possessed an institution for the cultivation of the arts similar to that in which France so liberally educates those who embrace the sister arts of architecture, sculpture, and painting, it would have been unnecessary for us to form this Society: we should have been taught by competent professors, and have received advantages valuable to ourselves and to our country. I believe I may affirm, without fear of contradiction, that there is no institution in the world where architecture is taught with so much advantage to the youth who embrace the profession, and to the nation which provides the means, as the E'cole des Beaux Arts in Paris; and so thoughtful has been this nation in the cultivation of the science of architecture, that it has established a school in Rome for the improvement of French artists and architects. What has been the result? magnificent works of art! I will cite but two, well known to many of you. The Temple de la Madeleine and the Arc de l'E'toile; in opposition to which, as almost contemporaneous works of art, we may place, with a sigh, Buckingham Palace, and the Triumphal Arch at Hyde Park Corner. As a Society, we ought to feel proud that, with such humble means, we have been enabled to sustain ourselves in the position in which we now are, without any assistance from the nation, or sympathy from our elder brethren, save the marked approbation of Sir John Soane. I will not enquire now why we have not yet excited the sympathy of our brethren; because I still live in hope that they will see in a favourable light the national advantage to be derived from fostering a vigorous shoot from the parent stock; and that, with a parent's feeling, they will extend to it their valuable aid and protection.

In conclusion, gentlemen, I trust that, by our vigorous exertions in the pursuit of architectural knowledge, this useful Institution may become each year more valuable, not only to ourselves, but to the students who embrace the advantages it offers them; so that eventually the Architectural Society may come to be considered a national advantage: and such should ever be the especial aim of the founders, in the formation of all societies."

Dec. 22. 1836.—After the reading of Mr. Woolley's paper (which forms Art. I. in our present Number), Mr. Cowell exhibited a model of his newly invented sash suspender (see p. 72.), and explained to the Society its use and application. The simplicity of the contrivance created unusual approbation.—*G. H. B.*

Jan. 10.—Mr. Alfred Beaumont read a paper on the best mode of warming buildings. The first requisite, he stated to be a complete combustion of the fuel; and the second, a complete delivery of the heat evolved in the place intended to be warmed. Nothing could be more wasteful of fuel than common open fireplaces: only one part in fifty radiates into the room, the great body of heat going up with the draft of the chimney. If a kettle of water be placed before the fire it will not boil in less than twenty-four hours: placed over the fire, it boils in half an hour. If a man stand in front of the fire, he gets only half warmed; the half next the fire is warmed, while the half away from it is chilled: but, if he were to place himself in the line of the draft over the fire, he would soon be burnt to a cinder all round. The ancient Romans understood these things better than the moderns: they carried their flues horizontally under the pavement of the chamber to be heated. A stove on the same principle was erected at the County Fire Office ten years ago, which has answered perfectly; and Mr. Beaumont has erected similar stoves at the elephant-house in the Regent's Park, at Sudbury Grove, at St. James's Church, and other places, with similar success. These simple contrivances produce a saving of eleven twelfths of the fuel consumed to obtain the same warmth by hot-air and hot-water stoves, and with perfect freedom from dirt, dust, smoke, and impurity of every kind. He was sure they only required to be more known to be adopted in all churches and chapels throughout England." (*Morn. Chron.*, Jan. 11. 1837.)

Art. VI. *Institution of Civil Engineers.*

The following is a report of the principal proceedings during the last session of the Institution. The presents received have been numerous and valuable. The maps already published of the Ordnance Survey of Ireland (on a scale of 6 in. to a mile,) have been presented by His Excellency the Lord Lieutenant (the Earl of Mulgrave), who has directed the remaining sheets to be sent as they are completed. There have also been promised to the Institution, by the Master General and Board of Ordnance, a copy of the Ordnance Survey of England, and, by the Lords of the Admiralty, the extensive Series of Hydrographical Charts published under their direction.

The above presents show the estimation in which the Institution is held by various branches of the government; and, in addition to them many other valuable contributions have been made, which appear in the annexed list. Among these are, a complete set of the *Philosophical Transactions*, consisting of 118 volumes, which the President has added to the library; and the handsome present from Mrs. Page of about 300 volumes of books, with all the papers and plans relative to civil engineering, collected by her late husband Colonel Page, an honorary member of the Institution; and also the manuscripts, copperplates, notes, and other matter, for a work on Inland Navigation, which he had intended for publication. These, with the late President's professional books and papers, have put the Institution in possession of, perhaps, the best collection, in this or any other country, on the subject of inland navigation.

But, while so much has been done by others to advance the prosperity and add to the importance of the Institution, the council trust that members and associates will not be wanting on their part, and that they will not fail to contribute such original communications before the commencement of, or during, the approaching session, as will prove the interest they take in this Institution. Accounts and drawings of works, as actually performed, will be particularly valued, as well as papers of other kinds; and all will come in competition for the Telford premiums, which are adjudged to the communications best entitled to the honour.

In conclusion, the Institution may justly be considered in a flourishing condition, the attendances during the last session having been more numerous than those of any former period, and there having been an accession of twenty-eight new members or associates; while a purchase of 400*l.* three per cent consols has been made, making the amount now invested in stock 535*l.* 3*s.* 8*d.*, besides the Telford Fund of 1945*l.* 19*s.*, and the balance in the hands of the Treasurer, 241*l.* 7*s.* 3*d.*

The following original communications have been received in the course of the session: —

Bridges. Description and drawing of a proposed Floating Bridge over the Vistula to connect Warsaw and Praga; by E. Marconi. Drawings of the Pont des Invalides and the Pont de Jéna in Paris; by W. B. Bray, A. Inst. C. E. Description and Drawing of Ruthern Bridge, on the Bodmin and Wadebridge Railroad; by T. Hopkins, C. M. Inst. C. E. Sections of Pont du Carrousel. Drawing; by W. B. Bray, A. Inst. C. E.

Canal Navigation. Calculations and Suggestions; by J. J. Waterston, A. Inst. C. E. Papers on, by Col. Page, H. M. Inst. C. E.

Excavations and Embankments. A new mode of representing and estimating; by J. J. Waterston, A. Inst. C. E

Iron Piling. Memoir of the use of, with drawings; by M. A. Borthwick, A. Inst. C. E.

Lock-gates. Description and model of a mode of framing of; by C. Ballard.

Machinery. Drawing and description of a Machine used in forming the Harbour of Sarclet, Scotland; by J. Bremmer, C. M. Inst. C. E. Description and drawing of a Machine for clearing away sand from foundations in harbour-buildings; by J. Bremmer, C. M. Inst. C. E. Drawing of an improved Mashing Machine; by R. Moreland, A. Inst. C. E. Four drawings of Hunter's Stone-planing Machine; by Mr. Lindsey Carnegie.

Port of London. Historical account of, and observations on, the Port of London; by C. Bourns, A. Inst. C. E.

Mines. Paper on the mode of working them in South America; by John Hawkshaw, A. Inst. C. E.

Railways. Description and drawing of a new Carriage; by Mr. G. Morton. Description and model of a new Chair; by George Baker, A. Inst. C. E. Drawing of a Parallel Rail and Pedestals; by R. Daglish, C. M. Inst. C. E. Description and model of an improved Railway; by Mr. J. Reynolds. Account of the Bodmin and Wadebridge Railroad; by Rice Hopkins, C. M. Inst. C. E.

Rain-gauges. Results of experiments at Greenock and Rothsay, with them; by R. Thom, C. M. Inst. C. E.

Steam and Steam-Engines. On the relation between the temperature and elasticity of Steam; by Thomas Webster, M. A. Three papers on the elasticity of Steam; by Jacob Perkins, M. Inst. C. E. An account of an experiment on the elastic force of Steam; by Mr. John Taylor. Paper on the High-pressure Engines working in the Cornish Mines; by Mr. Thomas Wicksted. On the causes of the difference of duty done by the Cornish and Soho Engines; by Jacob Perkins, M. Inst. C. E. On the improvement of Steam-boilers; by Jacob Perkins, M. Inst. C. E.

Tunnels. Paper on the effects produced by locomotive engines in Tunnels; by Mr. George Smith. A mode of ventilating and lighting them, with a drawing; by Robert Sibley, M. Inst. C. E.

The presents of books were very numerous; but we cannot spare room for their titles.

Various maps and prints were presented; also specimens of concrete, granite, stone and slate, timber, and valves.

The subjects discussed, of which minutes are preserved for reference in the records of the Institution, are as follows:—

Air. Compression of; and of Gases. Elasticity of.

Bridges. Balance Bridges.

Buildings. Methods of restoring them to their perpendicular position.

Centering. On the time and mode of striking. On that of Chester Bridge.

Coals. Weight and properties of different kinds.

Cast Iron. Decay of, in Salt Water.

Cements. Strength of different kinds.

Excavations and Embankments. Method of estimating quantities.

Harbours. Works at Dundee.

Mines. Produce of South American.

Machine. Hunter's Stone-planing.

Railways. Work performed on the Stanhope and Tyne. Day's Continuous Base Railway. G. Baker's improved Chair. Reynolds's improved Rails. Weight of Rails.

Rain. Methods of registering the quantity.

Rivers. Navigation and Tides of the Thames. Improvement of the Clyde. Conservancy and improvement of the Thames.

Safety Lamps. Merits and defects of various kinds.

Steam-Engines. Duty of those in Cornwall. Duty of those in the Fens. Performance and Friction of Locomotive.

Steam. Elastic force of.

Timber. Destruction of, by worms. Preservation of, under ground.

Art. VII. *Society of Amateurs of Art.*

It is proposed to establish this Society for the purpose of enabling amateurs of every art to meet in social intercourse, once or twice a year, or oftener if agreeable, in order to have the opportunity of making the acquaintance of artists, either of eminence or of promise, and to learn the prospects and occupations of art in each season.

For this purpose, it is proposed to hold an evening conversazione prior to the opening of the annual exhibitions, and at such other times as may be deemed convenient and agreeable to the members, which may be attended, upon invitation, by the most eminent artists in architecture and civil engineering, oil and water-colour painting, sculpture, engraving, modelling, &c., and by the members of the Society. All foreigners of distinction, whether patrons of art or artists, who may visit the metropolis, may also be invited at the discretion of the committee of government.

Any member of the Society shall have the right to recommend names for an invitation, upon stating the grounds on which it is deemed fitting that the person should receive one; but the propriety of giving or withholding invitations shall remain absolutely with the committee. The committee for the government of this Society shall be selected from among the members at large. The printed list contains twenty-five names, best known to the public as patrons and admirers of art, who have consented to form the first committee of government. Vacancies by death or resignation shall be supplied by ballot from among the whole body of the members of the Society.

The Society shall consist of both ladies and gentlemen, and of any limited numbers that the committee may determine. All future vacancies or additions to the Society shall be made by election from printed lists of candidates; the ladies electing from such lists by themselves, and the gentlemen by themselves. The subscription shall be one guinea per annum, commencing from the 1st of January, and payable before the first conversazione in the year, or the membership to terminate.

The union, in this Society, of the best-informed of those who study and love the arts for their amusement, must be agreeable to themselves, and may possibly become eventually beneficial to the interests of art, by inspiring the public mind with a better confidence for their encouragement. The committee of government shall be empowered to make such further rules and regulations, and to make such disposal of all moneys that shall pertain to the Society, as in its judgment and discretion it shall deem fit; and the committee shall not be subject to any annual change, in order that it may retain the consideration in which it is desirable that it should be held by the great body of the artists in the kingdom. The funds of the Society shall be applicable to the necessary expenses of hiring, lighting, and warming the requisite apartments, as also in providing refreshments, and other incidental expenses.

Further information may be obtained of the Honorary Secretary of the Society of Amateurs of Art, care of W. H. Dalton, bookseller, Cockspur Street, London.

Art. VIII. *Obituary.*

Died, on December 11., at King Edward the Sixth's Almshouses, Saffron Walden, Essex, in his 91st year, *Mr. William Ivory*, formerly a very respectable architect and builder in that town. [We should like much to learn some particulars respecting the life of Mr. Ivory; and, more especially, what cause or causes led to the circumstance of his dying in an almshouse. The biography of such a man may be useful to living architects and builders.]

THE
ARCHITECTURAL MAGAZINE.

MARCH, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *The Three Hundred Churches of Rome, with some Hints upon the Advantages of Colour in Monumental Architecture; from an unpublished Journal of a Tour in Italy in* 1835–36. By Henry Noel Humphreys.

To describe, or even enumerate by name, all the Catholic churches of Rome, would be tedious, as well as unprofitable; so I shall content myself with a brief summary view of the general impressions which were the result of my rambles among the above-mentioned three hundred.

After S. Giovanni Laterano (to which I have devoted a separate notice), the greatest point of attraction to me was the ruins of S. Paolo *fuori delle Mura*, which, previous to its destruction by fire in 1823, was the finest, or, at all events, the most interesting, ancient Christian basilica in the world.

Upon the site of a little oratory, raised (according to the Catholic legend) by S. Anacleto, over the spot where St. Paul earned the glories of martyrdom, Constantine, at the instigation of his converter, S. Sylvestro, caused a basilica, dedicated to the great apostle of the Gentiles, to be erected, which was first consecrated by the same S. Sylvestro, A. D. 324. It was enlarged by Valentinian and Theodosius; much enriched by Honorius, in 395, and repaired and reembellished by Eudocia, daughter of Theodosius, in 440. At this period the city had, in some degree, recovered from the shock of the devastations of Alaric, in 409; and its feeble emperors, during a short interval of peace, were pulling down the few remaining public edifices that possessed any architectural beauty, to embellish the temples of the rising church, then so ably governed by Leo I., surnamed "the Great." Among the embellishments of S. Paolo which may be referred to this date, were the chronological portraits of the popes, painted by order of Leo, from St. Peter to his own time; and this precious and interesting record of the state of the pictorial art in the fifth century existed until the ever-to-be-regretted fire of

1823. An interesting specimen of the arts of a somewhat earlier period, however, still remains uninjured; viz. an elaborate mosaic of the time of Honorius (395), as is shown by the verses, still shining in the original letters of gold upon their purple ground.

> "Theodosius cœpit, perfecit Honorius aulam
> Doctoris mundi, sacratam corpore Pauli."

Previously to the fire of 1823, the edifice of Constantine remained uninjured, and was, although in great part encased with the mosaics, pictures, and barbarous architectural additions of the middle ages, in despite of the heterogeneous nature of its structure, a fine mass; forming, as it were, an illustrative history of religion and the arts, from the fourth to the nineteenth century. At all events, it carried the imagination vividly over that expanse of ages, and served to reanimate those historic images which had, perhaps, in many, lain dormant since the years of youthful study.

There was, still, that wondrous avenue of gigantic columns of Parian marble, cut from the quarry in single stupendous shafts, and still crowned by their classic capitals, which were torn from the pagan tomb of Hadrian, and which offered a striking picture of the boundless power of Rome, which, in the time of Constantine, had not yet lost any of its force. You stood in a Roman temple, though a Christian church. There were (and there still exist) the mosaics of Honorius, symbols of Roman art, struggling, even in the extinction of her power, to make a last effort in honour of the new and true religion. There was the Gothic pavilion, with its twisted columns, surmounted by a feeble imitation, or rather reminiscence, of the Corinthian capital; sarcophagi of Vandal forms, encrusted with Roman mosaics, in every fanciful emblazonment of the figure of the cross; carrying us forward to the period when the barbarian, having laid prostrate the giant power of Rôme, adopted her religion, and caught, to mingle with the wild fancies of the north, the last sparks of her expiring arts. Next was illustrated the growing power of an already ambitious church over the darkest of the dark ages, in the rich mausoleums of the early bishops, whose effigies, in mimic sleep, still repose beside the less ostentatious tombs of the warriors, whose hands joined in prayer, and legs crossed (the alleged privilege of a crusader), proclaim them but vassals of the church. What wild images arise, and float across an excited mind, as the scene before us reproduces, as it were in a mirror, those dark ages of war and prayer, of vainglôry and virtue, of recklessness and devotion!

There, in the elegant yet fanciful ornaments of an additional *capella* to some saint or noble, we might recognise, in the form of its highly ornamented sarcophagus, with some quotation from a Greek or Roman classic author upon its tablet, a monument of the revival of the arts; and we might picture to ourselves the delight of the freshly learned in the discovery, day after day, of new treasures of the long-lost poetry and philosophy of a state of civilisation that had passed away; and the enthusiasm of the artist, whose eyes were newly awakened to the beauties of the still remaining specimens of ancient art. Next came the richer and more massive, but less quaint, and perhaps less pleasing, monument of a time nearer to our own. The church ruling with despotic sway the fierce nobles who had possessed themselves of the lands of Europe, her temples became crowded with the gifts and decorations of these bigoted spoilers; who thus propitiated at once a tyrannical church and a troubled conscience. The sepulchral monuments of this age are gorgeously rich; being formed of the most costly marbles, encased in lapis lazuli and jasper, embossed with precious gems, and loaded with enrichments of gilded bronze, forcibly painting at once the wealth, the taste, and the bigotry of the age in which they were erected. It was the Augustan, or rather Leonian, age of the arts of modern Italy. In thus following the embodied history of art preserved in the monuments of S. Paolo, we might have continued through the three remaining centuries to the present era; but it was a dream, and the vision has vanished: the basilica of S. Paolo is now a heap of ruins! It is said that it is to be restored; and, indeed, convicts are now at work upon it. But how restored? Who shall restore that crowd of monuments, with their associations and illustrations of the past? None but the poet!

The convicts of Gregorio XIV., who are lazily wandering with their half-filled wheelbarrows over the wreck, will be many years, at their present rate of work, in clearing the remains; and before the architect can fairly commence his task, who can say what changes may impede his progress? For, if it be true that

> "Coming events cast their shadows before,"

there is indeed a dark horizon of change and revolution before us, which may for ever prevent "the rebuilding of the temple." The clouds of speculation and scepticism may even sweep its pure religion from the earth; and then, as Châteaubriand emphatically exclaimed, "Quelle religion succédera au Christianisme sur la terre?" It is indeed an awful reflection: but let us also reflect upon the past to gather hopes for the future. What has not the Christian religion undergone? Open persecution and private machination it has suffered unshaken; the edge of the sword, and the keener thrust of the pen, it has withstood; and the weapon of the mercenary, or the gibe of the infidel, has eventually served but to enlarge and strengthen its basis, and to increase and confirm the numbers of its disciples.

To return to the churches of Rome: many are entirely modern; and these present but little to interest the antiquary and archæologist, or even the mere dreamer: I mean all such as have been constructed during the last three centuries. They are, however, generally good specimens of the architecture of their respective dates; and their interiors are encased in every brilliant hue that can be obtained from the marble quarry, and enriched with a profusion of gilding. They are built generally in the form of a cross, with a dome at the point of intersection in the centre; for, after Bramante, emulating Bruneleschi's effort in the Duomo of Florence, had so splendidly worked out the idea in the conception of his magnificent plan for St. Peter's, domes became the rage; and no plan for modernising or building a church was considered complete without one; so that many were completed in Rome ere the gigantic mass of St. Peter's had reached its cornice. One of the most splendid of these is that belonging to the Church of the Jesuits, a fine monument of the high and palmy days of that now fallen order. The whole interior of this church is one glittering mass of painting, sculpture, gilding: it contains whole forests of columns of the rarest marbles of every variety of colour; and, for its size, is one of the richest churches in Rome.

I shall now attempt more particularly to describe two of the finest churches in Rome; viz. Sta. Maria Maggiore and St. Peter's. Sta. Maria Maggiore is, perhaps, the most elegant temple in the papal city; and it still preserves its original form, viz. that of the ancient basilicæ, or courts of law. The early Christians held in such abhorrence the pagan idolatry, that the very forms of their temples were rejected, as unfit for places of Christian worship, and that of the basilicæ adopted, as being the most distant from it. So many churches were built in this form during the dark ages, that the name of basilica became generally applied to the largest and oldest churches; and it is still retained as a distinctive title of cathedrals, whatever may be their form; and, consequently, is often now totally misapplied. The basilica of Sta. Maria Maggiore, however, is one of the churches originally constructed upon the model of the courts of law; and still, in despite of the many modern alterations it has undergone, its three naves are distinctly marked, and divided by thirty-six superb antique columns of Greek marble, the shaft of each consisting of an entire block. Beneath an arch in front of the tribune stands the pavilion, supported by spirally twisted columns of gilded bronze, which forms a sort of canopy over the papal altars, at which no other than His Holiness ever officiates. The ceiling is flat, but sunk into deep and elaborate compartments, enriched with painting and gilding; the splendid design of San Gallo; the gold employed being the first sample of the precious metal brought from the New World, an offering of Ferdinand and Isabella to Alexander VI.

There are many interesting mosaics in different parts of this basilica; but what strikes the visiter perhaps more than any of the splendours of the Romish churches, are the two *capelle*, named Paolina and Sistina, after the same popes as the more celebrated ones in the palace of the Vatican, Sisto V. and Paolo V.; the former the celebrated Cardinal Peretti, the latter a Borghesi.

The Sistina, erected in 1586, from the design of Dominico Fontana, with its enrichments of Grecian marble, stucchi, altirilievi, gilding, bronzes, and paintings, and magnificent tomb of its founder, presents a mass of splendour which one would conceive impossible to be surpassed in a similar space, till we turn to the corresponding chapel on the other side of the church, the Paolina, or Borghesiana, as it has also been termed. Its form and size are the same as those of its rival: a compressed Greek cross, of about 20 ft. square, surmounted, at the point of intersection, by a dome. But here the parallel must cease; for, as in the Vatican, the Sistina immeasurably surpasses the Paolina, where Sistus, aided by the mighty hand of Michael Angelo, defied approach; so the struggle for superior splendour in Sta. Maria Maggiore is decided, beyond comparison, in favour of the wealth of Borghesi.* The splendid gates thrown open disclose, on one side, the tomb of Clement VIII. (Aldobrandini), and on the opposite that of the founder; whilst in front rises the altar, the noblest composition of Rainaldi. But to describe this chapel, the principal architect of which (in 1611) was Flamminio Ponzio, a Milanese, is impossible: it is one elaborate mass of beautiful works of art. Not a spot but is occupied by a rich basso-rilievo, a tablet of rare and elaborately inlaid marble, a deep niche with its projecting statue, or a division of a compartment by an embossed bordering of gilded bronze; and those divisions of the dome which are not from the magic pencil itself of Guido Reni are mosaics from the designs of that master, or Algardi. The architect has not here had to study how he might produce the greatest effect with the least labour and expense, but how to pile together a mass of the most elaborate works of the best artists of the age, in such a manner as to give the repose necessary to produce that unity of effect, without which it would have been all fritter and gaud. In such a combination, this appeared impossible: he has, however, succeeded; and, by dint of admitting his light from but one point (the *cupoletta* which surmounts the dome), by strongly projecting cornices and deep niches, and by a happy arrangement of the juxtaposition of colours, he has preserved that simplicity, that unity of effect, which few attain, even when unencumbered by such overwrought materials. These two *capelle* are, in short, masterpieces of the union of luxury and art, and form splendid illustrations of what might be termed "natural polychromy" in architecture. The splendid alti-rilievi which enrich them are the finest I have ever seen, the works of modern art; and the only ones I could even compare with the wonderful productions of the ancients in this branch of sculpture. For, although the moderns may, in one or two cases, have rivalled even the Greeks in a detached statue, in this department, the Grecian depth of effect, variety of execution, and facility of composition, I have never seen approached by modern artists, except in the highly wrought specimens of which I am speaking, and which are the works of Stefano Maderno, Buonvicino, Buzio, Valsoldo, and Francesco Stati; the greatest artists of that age, who threw all their energies into the rich stock which was to compose the monument at once of their profuse patron and themselves. These creations of the chisel represent conclaves, councils, excommunications, benedictions, and other passages of papal story; and, for the beauty of the historic costumes, the high finish and expression of the heads, and their bold and well-studied relief, exceed anything of the kind I have seen. In short, these two chapels of Sta. Maria Maggiore are to me two of the wonders of Rome, perhaps of the world.

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* There can be no comparison instituted between the celebrated chapels of the Vatican and those of Sta. Maria Maggiore; the former being of considerable size, and erected for the purpose of the private devotions and splendid functions of the reigning pope; while the latter are but chapels erected above family vaults for the celebration of masses for the dead.

To give an idea of the combination of such treasures of material and art, imagine, as the centre of a compartment, the tomb, a sarcophagus of porphyry, with its recumbent statue of marble, based upon slabs of African or Sicilian jasper, clipped and bound with enrichments of gilt bronze. Above, a rich alto-relievo, in an *encadrement* of lapis lazuli, surrounded by mouldings of gold; this spreading into compartments filled with inlaid marbles or mosaic; and between them niches, containing their statues of bronze or marble; beyond which shoot up the pilasters of *verd* or *giallo antico*, with their composite bases and capitals of gold; supporting a frieze and cornice enriched with all the luxurious embellishments that profusion could suggest. From the cornice spring the four arches which support the dome, a blaze of the richest mosaic, painting, gold, and marble.* The altars opposite the entrance gates are still more sumptuously decorated;

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* It may easily be conceived how infinitely superior such a rich combination of colour must be to anything that could possibly be produced in cold and monotonous white.

particularly in the Borghesiana, which possesses a portrait of the Virgin, as it is said, by St. Luke.

All the principal families of Rome have their chapel in one or other of the churches; but none approach these in magnificence: the only one which can at all sustain the comparison (and which, by many capable of judging, is considered the finest in Rome) is that of the Corsini, erected by Clement XII., about 1745, under the superintendence of Alessandro Galilei, and dedicated to his ancestor S. Andrea Corsini. This, however, with all its elegance of style and correctness of proportion, appears to me but a tamed down copy of those I have been speaking of, and cannot bear a comparison with the more gorgeous works of the earlier period.

There are several beautiful chapels in the cinquecento taste at Sta. Maria del Popolo, and at the Minerva. The principal attraction of this latter (almost the only church in Rome allowed by modern improvers to retain a Gothic form) are its numerous tombs of celebrated persons of the cinquecento period, many of which are of most elegant and original design. I should also mention its famous "Christ" of Michael Angelo, one of the statues I alluded to when speaking of modern rivalry with Grecian art. Such is the devotion which this statue created among Roman pilgrims, that the foot, which slightly projects beyond the pedestal, is now encased in metal, to protect it from the kisses, which had nearly worn away the great toe; and the new encasement, I lament to say, is already wearing through at the point, and polished as bright and smooth as a mirror. But, to complete my sketch of Roman churches, I must hasten to St. Peter's.

This, though last described, was the first church I visited in Rome. I had scarcely got my horse properly attended to *, and cooled, I own, from the vexations of the *dogana*, than I hastened forth, inquiring my way to St. Peter's: for the vast monument of the supremacy of the popes is even a more powerful magnet than the relics of the dominion of the Cæsars. I soon found myself on the bridge of S. Angelo; and then it was that I first felt myself in Rome. I passed the castle, and hastened forward towards St. Peter's: it broke upon me; but, like others before me, I was disappointed; so much so, indeed, that I determined not to attempt to describe it in my journal until I had waited the effect of a second impression. Had I then passed the portal, I should, doubtless, have come to a different conclusion; but I had ordered dinner as soon as possible, and a drive of some twenty miles over the campagna had somewhat sharpened my appetite; so I returned, rather chilled in my enthusiasm, to my inn. So much for my first glimpse of St. Peter's.

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* I travelled from the north of Germany, through Munich and the Tyrol, to Rome, with my own horse and cabriolet, without meeting with any obstruction from bad roads, or other grievances mentioned by tourists, and found it a cheap and agreeable mode of travelling, since it enabled me to go which way I chose, and see what I liked.

I have now revisited this vast cathedral several times. The exterior strikes me as at first: there is nothing about it, except the two superb fountains and the circular colonnade, worthy of its reputation. The portico, or rather façade, is certainly bad: I do not mean incorrect, or inconsistent with the accepted rules of art (though even that might be urged in many respects), but badly placed, and inconsistent with the rest.

The Italians tell you that the architect of the façade, Carlo Maderno, made it rather low, in order not to conceal the dome. The dome is certainly sufficiently concealed, by standing so far back, the consequence of the immense length of the nave, without being farther crushed by a too lofty façade: but the fact is, that the façade (though as low as the height of the body of the building would allow) is, in reality, high enough, provided that height were made manifest, instead of being concealed, as it is, by injudicious architecture. The altitude of the façade is much decreased in appearance by the immense columns, the height of which appears so much less than it really is. Had the height of the façade been divided after the manner of our St. Paul's, the lower portion Doric, with Corinthian above, its apparent altitude would have been much increased.

The Coliseum, which appears so immense, so astonishing, is, in fact, scarcely higher than the façade of St. Peter's; but it is, as it were, multiplied: the eye is carried up tier above tier; from the bold Doric colonnade of the basement, to the Ionic above, and, still higher, to the lighter Corinthian; this division of space preventing the eye from grasping at once its real dimensions, and leading the imagination (through the idea of one building piled upon another) to form that impression of vastness which the Coliseum never fails to leave upon the mind. But if, on the contrary, immense columns had stretched from the basement to the cornice (as is the case in the façade of St. Peter's), I am persuaded that the effect would have been, comparatively speaking, diminutive, particularly in height. One column, running up the whole extent of a building, is, as it were, a measure placed against it, by means of which the eye at once grasps its extent. It is by a certain division of parts that the span is to be multiplied, the real extent concealed, and the effect of immensity attained. A stupendous mass of granite (say 100 ft. in height) appears but a huge pebble in the expanse of the desert; but, when carved into the limbs of a statue, although deprived of two thirds of its bulk, it is gigantic: so much is an object magnified by a just and symmetrical division of its surface. I am aware that this opinion is somewhat at variance with the rules of the purest ancient art; but our more complicated constructions require, perhaps, some modification of those simple precepts.

These remarks may appear fanciful to an architect; but I cannot help thinking that, to one totally unshackled by the theories and rules of art, they will present, at least, some appearance of truth. So much for the façade. The dome, as I have said above, is lost on a near approach, on account of its standing so far back. But it has other faults: for want of a more swelling curve, its outline is not nearly so imposing as it might have been; and, from the great cornice being broken into petty projections over each column of the gallery, it has none of that sublimity of repose which characterises the dome of St. Paul's, notwithstanding its superior magnitude: in short, as an architectural whole, I think St. Paul's very superior to the great St. Peter's. Many have urged, as one of the extraordinary beauties of St. Peter's, that it is (in consequence of the justness of its proportions) much larger than it appears to be; a fact which I conceive to be its most glaring defect, and upon which I found the triumph of the British architect; who, upon a less scale, consequently with fewer means, has produced a grander whole: it is generally allowed that St. Paul's appears more vast than it is. This is the real triumph of art. In one case, the most is made of the means; in the other case, the least.

These were my reflections whilst in the piazza; but the bronze portal once passed, all comparisons were at an end. St. Peter's stood alone, unrivalled, wonderful! Its gorgeous dome, suspended in mid-air, is a firmament: the place has, indeed, an atmosphere of its own; and in this vastest of cathedrals the temperature knows no change, neither with the enervating *scirocco*, nor with the piercing *tramontana*, in winter or in summer. It is the largest covered area in the world; and, with many faults that the hypercritical might discover, is, perhaps, as near to perfection as human art, upon so vast a scale, can attain. Its great extent has not interfered with the beauty of its smallest detail: it is rich, elaborately rich, in every part; but every enrichment miraculously tends to assist and form the grand whole — like the varying scenes, and even episodes, of a fine drama, all tending to one great denouement.

After the first astonishing *coup d'œil*, I was most struck, on entering, by the grandeur and beauty of the holy water fonts on either side, supported against the enormous pilasters by two infant figures of white polished marble. These figures appear, from the centre of the aile (and in relative proportion to the building), of the natural size; and it is only upon a close approach that a full-grown man finds himself a mere pygmy by the side of these infant colossi. The extent of some of the most celebrated cathedrals of Christendom is marked upon plates let into the pavement; and, after having advanced up about one fifth of the length, you observe the tablet marking the extent of St. Paul's of London; next comes the Duomo of Milan; then that of Florence; then St. Sophia of Constantinople; and, lastly, St. Marc of Venice.

As you approach the centre of the cross, the great dome opens above you, glittering in its purple and gold amid the flood of light that it sheds upon the vast masses beneath: and of all this splendour nothing is perishable; the cerulean blue is lapis lazuli, the glowing devices are mosaic, and the gold is plated upon bronze; so that damps, which have done their work of devastation in St. Paul's, touch nothing here: all is fresh and beautiful as though finished yesterday. Here you see the Transfiguration of Raphael, and the S. Girolomo of Domenichino, transformed to stone in the elaborate wonders of mosaic; and thus transmitted to remote ages for their speculation and admiration. All the pictures of St. Peter's have been, or are in progress of being transmuted to the endurable materials of mosaic; and thus the destroyer Time is less to be feared in this temple of temples than the destroyer man.

One of the greatest beauties of the interior of St. Peter's, and of the churches of Italy generally, is the diversity of effect and relief produced by variety of colour displayed in the materials of which they are composed. This is the great cause of the admiration with which they strike the French and other strangers; but more particularly those of Protestant countries, and most of all the English. In the more northern portion of Europe, our architects have, by some extraordinary process of reasoning, decided that the use of coloured marbles (or imitations) in the interior of public buildings is a species of false taste; and, consequently, our finest interiors are invariably of one monotonous cold white, or stone colour. They have become such servile copyists of the remains of ancient art, that all for which an authority cannot be found in the ruins of some Greek or Roman temple is denounced as incorrect; and thus, as only the exterior of these monuments remains in any degree of preservation, and as no great authority exists for the interiors of public buildings, those great auxiliaries of interior decoration, painting, bronze, mosaic, and coloured marbles, are abandoned; and the few who have attempted to break through the despotism thus established have been denounced as quacks, or men ignorant of the rules of their profession. But a new era is arising, and scholastic prejudice is fast losing its hold. Polychromy, as it is now called, is beginning to be studied perforce, even by the most rigid devotees of ancient art: for some provokingly persevering antiquaries have now proved, beyond a doubt, by minute investigation, what had long been suspected by some, that even the exteriors of the finest architectural remains of Attica, now blanched by time, were once decorated with various colours; and that a regular system of polychromy prevailed in the purest period of Grecian art. Not merely did variegated marble columns adorn their porticoes, and delicate pencillings of gold heighten the effect of various parts of the cornice; but even the grounds of the reliefs which decorated the friezes were painted blue or red. These discoveries will, doubtless, lead to more enlarged views upon the subject; at all events, in exteriors, so far as what may be called natural polychromy is concerned, by which I mean the use of such suitable materials as possess natural variety of colour, such as rich marbles, metals, &c.; and, in interiors, what may be termed legitimate polychromy, by which I mean a judicious admixture of pictorial with the sculptured embellishments.

To return to St. Peter's: many, unreflecting, or unacquainted with the arts, admire its splendid interior, without being aware of this great cause of its effect; others, without admitting it; and Simond considers that a uniform wash of a light warm colour would much improve the effect. My position, however, may be further illustrated by a reference to the splendid mausoleums of the popes, which compose one of the grand features of this noble pile. Those by Giacomo della Porta, Polajolo, and even the more recent Bernini, are of varied materials; the massive sarcophagus, of red granite, or porphyry; the colossal figure of the pope, of bronze, or, perhaps, of the pure Carara stone; whilst the draperies of the allegorical figures beneath are of variously coloured marbles; the pedestal, with its grand *entourage*, richly finished with bronze of elaborate workmanship; and, perhaps, a canopy above, formed of a noble drapery, veneered with jasper or lapis lazuli, and fringed with a massive border of gold. These are the tombs which a stranger looks at with wonder and admiration; whilst the plain classic white marble masses of Canova or Thorwaldsen (for instance, the monument of Pius VII.) remain unnoticed; until the visiters, turning to their faithful companion, the guide-book, find these last are what it is good taste to admire, and they admire accordingly.

The pure taste system is more felicitously applicable to detached works of art; but, when we apply it, in full force, to monumental decoration, we deprive our interiors of one of the greatest accessories of splendour and effect. One English architect*, indeed, breaking through the trammels of his school, has said, in speaking of St. Peter's, in a recent work, "Whoever has mounted up into the gallery of the tambour, contemplated the rich blaze of mosaic above, lighted by the cupolino, and the splendid effect produced by the decorated wall, must acknowledge the magic combinations of form, light, and *colour*."

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* Donaldson. I quote from memory, but believe I am in substance correct.

Under the gorgeous bronze pavilion of the principal altar, which occupies the centre of the cross beneath the dome, is the entrance to the confessional of St. Peter, round which one hundred golden lamps continually burn; and here, too, is the entrance to that subterranean chapel which occupies the space between the pavement of the ancient basilica and that of the present structure. It contains many ancient and curious monuments, which might occupy the antiquary with endless speculations; and likewise relics, which are considered of so precious a nature that women are allowed no entrance there. Why the presence of females has been deemed injurious to the relics I know not; for certainly the Roman Catholic religion has far more and far sincerer votaries among that sex than in ours; as may be fairly inferred from the numbers who continually crowd the churches, where the admixture of men is comparatively small. Speaking of relics, I must not omit the ancient bronze statue of St. Peter, said to have been modelled from the life, but evidently a specimen of Greek art posterior to the age of Constantine. Around this venerated idol a crowd is always waiting to kiss the great toe, which is now (like that of the statue at the Minerva) nearly worn away.

Ere we quit the mighty cathedral, let us say a word of its architects. The names of St. Peter's and Michael Angelo Buonarotti have been so blended together by tourists and memoirists, that they have become almost synonymous; and in the magnitude of his fame Buonarotti has absorbed that of those who had greater claim to the title of authors of that great work. First comes Bramante, the original planner and designer of the mass. Nicholas V., in 1447, conceived the idea of rebuilding the then ruinous fabric, and commenced taking down a portion of the ancient basilica; but the first stone of the new edifice was not laid till 1506, by Giulio II.: its magnificent plan was traced by Bramante; and though, after his death, the studies and designs which he left were considerably altered and departed from by his successors, the main ideas were eventually carried into effect; and the edifice, as it now exists, is, as a mass, the idea of Bramante. He it was who, taking the hint from Bruneleschi's effort at Florence, conceived the idea of the wonderful dome; so that if one architect more than another deserves the exclusive fame of the design, it is, doubtless, Bramante. His successor, under Leo X., was Giulio de San Gallo; then came the great Raphael, with five associated assistants, all of whom died, however, in the short space of six years; and Paul III. appointed Antonio di San Gallo. He was in his turn succeeded by Michael

Angelo, who at first declined the honour, alleging, modestly, that *architecture* was not his art; a feeling fully borne out by many of his architectural works, in which ignorance of the simplest rudiments of the art is but too often displayed. His modesty was, however, overcome; and during his long life the work made greater progress than with any of his predecessors. From this circumstance, united to his great fame as a sculptor and painter, his name has become more associated with it than any that preceded or followed him; and more particularly as it fell to his lot to erect the greater portion of the dome, which he enriched with his splendid designs, and which must have struck all Europe with wonder.*

The celebrated Vignola, under Pius V., succeeded Michael Angelo; and, though an inferior genius, was a far better architect, as may be easily proved by a reference to any of his very numerous works. The dome and greater part of the interior were completed by Giacomo della Porta. Finally came Carlo Maderno, who, under Paul V., finished the great nave, and erected, from his own design, the portico, with which I have found so many faults: but he likewise designed the two superb fountains, which I so much admired upon my first approach. This completed the essential parts of the work; and in 1654, according to the Cavaliere Fontana, its cost had already been 47,000,000 of Roman scudi; which, at a rough guess, we may call 11,000,000*l.* of our money; an immense sum, when we consider the cheapness of labour at the time that a great part of the work was executed. Under Alexander VII., who was not contented with the piazza, though already decorated by the noble fountains of Maderno, Bernini planned and commenced the circular colonnade, which, under Clement X., gave the finishing touch to the great whole, which had occupied two centuries of unremitting labour and profuse expenditure.

Thus was triumphantly completed this wonderful monument of the power and wealth of the Church of Rome, the most powerful engine that ever worked upon the passions of man. The world, as at present socially and politically constituted, will produce no second St. Peter's: it is one of the gigantic efforts of the youth of a new civilisation, of the powerful working of a fresh state of things. It is like one of the vast designs which enthusiastic artists attempt, and sometimes complete, in their youth, and which they themselves, in their maturer years, are astonished that they should have had the hardihood to conceive, and the temerity to attempt. In some future age, after another barbaric darkness, the follower of some great convulsion, shall have passed over the enlightened world, another new and strange and vigorous state of things shall arise from its chaos, like seeds luxuriantly shooting from a fallow ground: then may such a monument as St. Peter's again arise, but not till then.

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* These, however, were suggested by the plans of Bramante, as may be proved by the published design. It must, however, be acknowledged that Michael Angelo imparted to them that grandeur of style which was the great characteristic of his genius.

Such are a few of the reflections forced upon me by a day's lounge in St. Peter's. I have not attempted to describe, or even to hint at, all the riches that the greatest artists of two centuries have congregated there. All that the graceful taste of Domenichino designed, all that the luxuriant fancy of Pietro da Cortona imagined, must be seen: they cannot be described. There are united the rich contributions of all the great names of the history of modern art in its noblest age, and, by a species of magic, blended into one harmonious whole in this justly called temple of temples; forming a reality (and, perhaps, the only one) that surpasses the vivid dreams of fancy.

I passed many agreeable days in rambling through the most ancient churches of Rome, seeking, with the greatest interest, such as contained remains of original Roman construction. San Pietro in Vincolo is said to occupy the site of a small oratory erected by St. Peter himself. It was rebuilt by Pope Leo the Great, in 442, with such materials as the Roman temples, ruined by the incursions of the Goths, or nearly deserted by their votaries, afforded in abundance. The fine Grecian Doric columns of Parian marble, then erected, still remain; but they are all that is left of the edifice of Leo. The ceiling is comparatively modern, and the walls present no traces of antiquity. Here is the tomb of Giulio II., designed by Michael Angelo: the figure of Moses, from the master's own chisel, is superb; indeed, one of his most celebrated *capo d'opere;* but the rest is very inferior, and, in short, as a composition, bad. St. Stefano Rotondo is, perhaps, one of the ancient churches of Rome which possesses most of its original form. The mass is, undoubtedly, antique; and, though it is not that of the Temple of Claudius, as has been asserted, it is most likely of the date of Pope Simplicio, whose dedication of it is recorded in 468, while architecture still possessed something of the antique character, particularly where materials of the greatest era of Roman art were supplied from Roman structures then in existence. This singular church is of circular form, favouring the idea of its being built upon the remains of a temple. The circular nave, sustained by fifty-eight columns of granite, has a fine effect; but their capitals and bases, though pretending to be of the Ionic order, are of barbarous execution; while the Corinthian columns, of greater height, which support the centre, a species of flattened dome, are of superb workmanship, and, most likely, formed part of the temple upon the ruins of which the church arose. The smaller columns, rising from above the granite columns of the circular nave, and supporting the roof, though quite out of the grammar of the art, have a pleasing effect, and form one of the singular characteristics of the Roman architecture of the fourth and fifth centuries; a beautiful specimen of which may be seen in the baptistery of Constantine. The walls of S. Stefano are covered with indifferent frescoes by Nicolo Pomerancio, displaying, in the most horridly disgusting manner, the excruciating sufferings of those who endured martyrdom under the early emperors; attended with every ingenuity of torment, from the tearing out of eyes with red-hot pincers, to crimping alive, previously to roasting or simmering in scalding oil; with many more mutilations, too disgusting to mention, all represented with curious fidelity. This is a singularly interesting exhibition to the Roman devotees (who, on the *festa* of the patron saint, visit this church in great numbers); particularly as the dates of the martyrdoms, and the names of the emperors, are inscribed beneath. These imperial butchers little thought to be thus held up to the execration of posterity in their own temples; still less that Rome, in after times, was itself to become the centre of the power of that sect which they were endeavouring to crush by their inhuman cruelties.

But to return to our subject: some fine remains of early structure are to be found in the Basilica di S. Sebastiano *fuori delle Mura*, where some splendid Corinthian capitals surmount columns to which they do not belong, and support a frieze of a different order. At Sta. Maria in Cosmedin, and Sta. Maria in Trastevere, there are also some interesting remains of form and material: but a few general characteristics will give a better idea of these oldest temples of Christianity than any particular description. Of the old churches of Rome only the very oldest remain; for all that were built in the Gothic style, after the pagan temples and their materials had been all used up, and the last remains of classic art abandoned, were destroyed or modernised in the fifteenth and sixteenth centuries. When once the moderns had discovered the secret of the perfection of ancient art, it became a sort of mania in Rome. A pointed arch, or a clustered pile of columns, was an abomination not to be tolerated; and it is astonishing with what perseverance they were hunted out, and demolished or metamorphosed; and so sudden was the transition of taste, that the progress of many half-finished Gothic buildings was at once stopped, and they were either entirely rebuilt, or their Gothic origin effectually concealed by an encasement of legitimate pilasters, &c. This will account for the very few Gothic remains of any description now to be found in Rome; except in detached *morceaux*, venerated as the depository of some sacred relic, or from some similar cause.

The churches of an origin previous to the Gothic period are, however, as I have said above, still numerous, and formed to me one of the most interesting fields of research, if I may dignify the curiosity of a mere amateur by such a term. These, with their various additions, modifications, and accumulations, form heterogeneous masses with which an antiquary would be enchanted. As they were most frequently constructed from the spoils of temples and other public buildings, whenever an opportunity for spoliation occurred, rather than upon any regular plan, with new materials, so their structure generally presents little uniformity of plan, and great incongruity of adaptation. A massive column of red granite, surmounted by a composite capital of white marble, stands in the same colonnade with one of giallo antico of Corinthian proportions, crushed by a capital of travertino of heavy Doric: next in the line appears a twisted column of the age of Constantine, which, too short to reach the architrave, is lengthened by a block of basalt covered with Egyptian hieroglyphics. Above, you get a semi-Gothic frieze of later date; and the ceiling, in strong contrast with the stern remains below, finely flourished over by a Lanfranco or a Pietro da Cortona. As you advance, you observe a pair of statues of old Roman senators, one of which, by having a bunch of keys rivetted to his toga, is made to represent St. Peter; and the other, by a sword being affixed to his broken hand, is transformed into the bolder Paul. In a neighbouring chapel, you perceive the tomb of a cardinal (stolen from the tombs of the Appian Way), representing a triumph of Bacchus, but properly sanctified to its purpose by a deep cross cut boldly through the fat form of Silenus, and dividing the graceful bodies of half a dozen dancing *bacchante*. The altar is, perhaps, supported, as at St. Giovanni, by columns from a temple of Jupiter. On a flat tombstone, the stiff effigy of a monk lies enshrined, with half the gods of Olympus represented in a piece of Roman mosaic, with which the tomb is decorated. At a favourite capella, a statue of Venus, with the addition of an embroidered petticoat, represents the Virgin; whilst the tripod from a temple of Vesta serves as the baptismal font. Such are a few of the strange juxtapositions into which things are hurried by a sudden change in the manners or religion of a state; like that which occurred when Constantine, yielding to the eloquence of Sylvestro, embraced the Christian faith, and cringing courtiers led a servile court and an enslaved people to do the same.

London, December, 1836.

Art. II. *Principal Plan and Perspective Elevation of a Design for the new Houses of Parliament.* By Peter Thompson, Carpenter and Builder.

I beg to return my best thanks for the very liberal and kind criticisms of your able reviewer B., on my humble *Design for the proposed new Houses of Parliament.*

Should you deem the following plan and perspective view* worthy a place in your valuable Magazine, as showing the disposition and arrangement of a mass of rooms required for the legislature of the kingdom (being the production of a "*mere carpenter*") it might, at the same time, act as a stimulant for the competing architects to publish their designs; possessing, as no doubt they do, such superior excellence and extraordinary talent. If they were thus to make your Magazine the depository of the whole mass, by so doing they would enable the public to give the due meed of praise to the "Committee of Taste," who have so wisely chosen the most talented design.

Description of the Plan of the principal Floor, as shown in *fig.* 18. A, Commons' portico. B, Peers' portico. C, King's portico. D, King's corridor. E, F, Courts, with carriage drives, or ground floor. G, Court.

1, Speaker's official residence. 2, Speaker's office. 3, Post-office. 4, Common hall and stairs. 5, Common lobby. 6, Commons' House with doorkeepers' and messengers' rooms. 7, Lobby for *Ayes* on division. 8, Lobby for *Noes* on divisions. 9, Common refreshment room.

10, Commons' committee rooms. 11, Commons' Sergeant at Arms' residence. 12, Commons' libraries. 13, Clerk of the Fees' offices. 14, Chaplains' office. 15, Speaker's retiring room. 16, Witnesses. 17, Committee clerk's office. 18, Vote office. 19, Public and private conference rooms between Peers and Commons.

20, Peers' entrance hall and stairs. 21, Peers' Collector of Fees, Master at Arms. 22, Lobby. 23, Peers' House, with doorkeepers' and messengers' rooms. 24, King's robing room. 25, Peers' libraries. 26, Peers' librarian's official residence. 27, Assistant reading and committee clerks. 28, Clerk attending the table of the House. 29, Reading and committee clerk.

30, Additional clerk assistant. 31, Clerk assistant. 32, Vote office. 33, Peers' robing rooms. 34, Peers' committee and witnesses' rooms. 35, Masters in Chancery. 36, Counsel attending the House. 37, Agents and Solicitors. 38, Witnesses. 39, Lord Chamberlain's offices.

40, Peers' coffee and refreshment rooms. 41, Clerks' business office. 42, Clerk of the Journals. 43, Copying clerk. 44, Clerks' office. 45, Clerk of Engrossments. 46, Clerks' business office. 47, Yeomen Ushers' dressing room. 48, Gentlemen Ushers' official residence. The remainder of the rooms requisite are distributed on the ground floor, and the story above.

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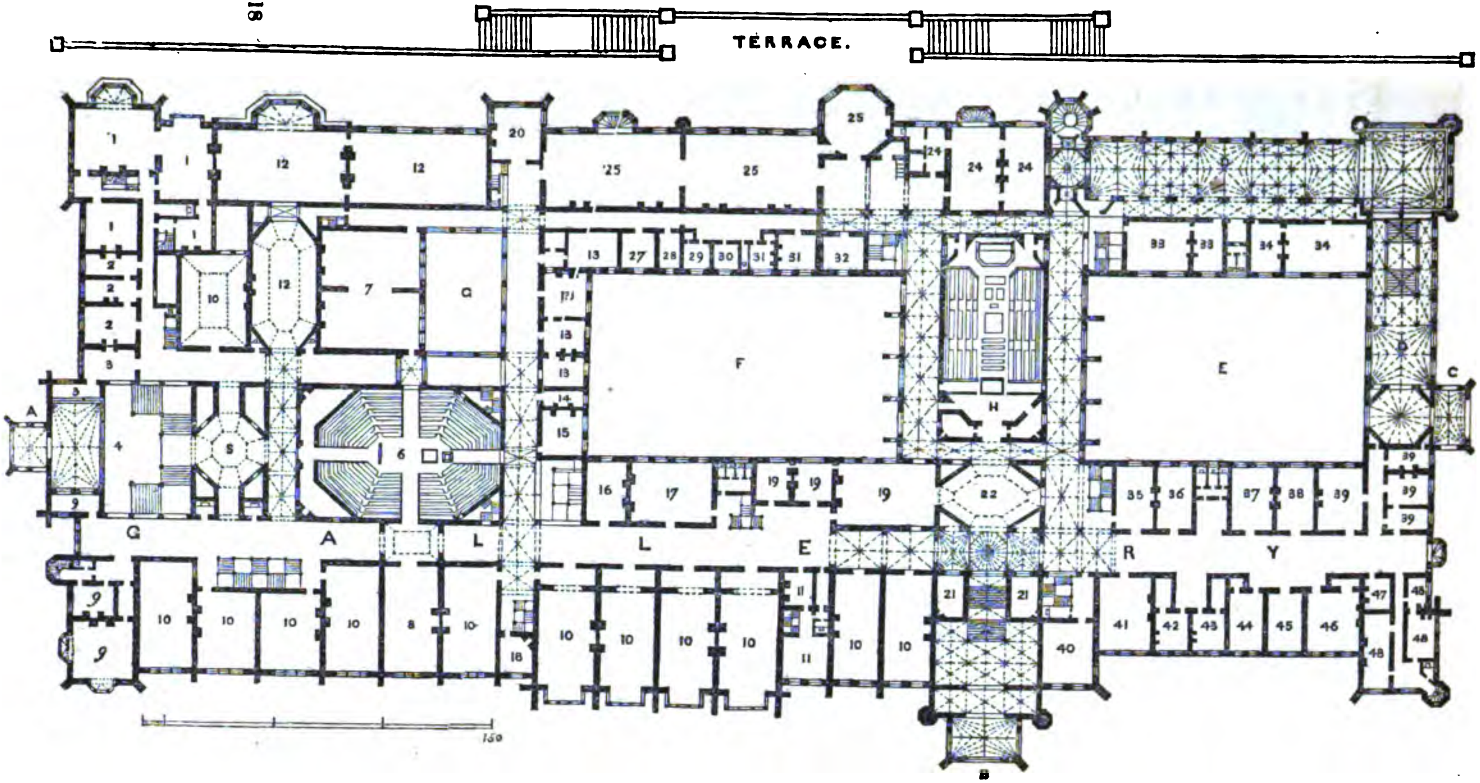
* Vide *Designs for the proposed new Houses of Parliament*, published Feb. 2. 1836, containing fourteen plates, 15*s*.


TERRACE.
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The perspective view (*fig.* 17.) is taken from the Surrey side of Westminster Bridge.

3. Osnaburgh Place, New Road, Feb. 11. 1837.

[The two engravings which illustrate this article have been presented to this Magazine by Mr. Thompson, for which very handsome present we feel extremely obliged to him.]

Art. III. *Candidus's Note-Book.*

Fasciculus IV.

"Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis."

I. I would not advise Dr. Ritgen to aspire to the honour of becoming a member of the Institute of British Architects, or, indeed, any other architectural society. He, Purser, and Savage might form an architectural trio, establish themselves as a triumvirate; but never could he amalgamate with a body of professional men, in which he would produce either fermentation or coagulation.

Antagonistic as they are to each other, Vitruvianists and anti-Vitruvianists, Palladianists and anti-Palladianists, Greeks and anti-Greeks, Goths and anti-Goths, have all one common point of contact and sympathy; namely, that they agree in acknowledging authority, and in deferring to precedent: whereas the formidable Doctor runs a-muck at all precedents, save the fundamental one of evolving style out of the necessities or proprieties of construction. He attacks (and that, too, without being at all scrupulous as to his expressions), and would fain upset, the whole system of imitation, by establishing which, we have, in his opinion, quite reversed the order of things, sacrificing immutable principles for the sake of retaining mere forms. His doctrine, therefore, must be equally unpalatable to our Welby Pugins and our Smirkes, to our Gwilts and our Wilkinses, all of whom must look upon him as a revolutionist and innovator of the worst kind; while he must, doubtless, regard them as little better than copyists and plagiarists, and exclaim, in the language of Cicero, "*Architecturam* ipsius viribus, non imbecillitate suâ, metiantur; nunc enim tantum quisque laudat, quantum se posse speret *imitari.*"

II. What may be some persons' notions of chasteness and elegance, I affect not to guess; yet they must be not a little lax, when those who entertain them can refer, as an instance of those qualities, to such a piece of design as the front of St. James's Theatre; than which, except the "gin palaces," a more flaunting and meretricious bit of architecture is hardly to be met with in the whole metropolis. Nevertheless, a critic in the *Mirror* is pleased to compliment it so clumsily, that the architect may very possibly interpret his flattery as ill-natured irony. About equal discrimination in the choice of his epithets is shown by the critic who penned the article on Noble's *Professional Practice*, in the *Gentleman's Magazine;* when, taking occasion to descant on the church of St. Mary Woolnoth, he assures us, that the "delicate hand" of Gibbs is plainly discernible in the front towards Lombard Street. Delicate! no doubt he is smitten by the delicate taste shown in the design of the windows of St. Martin's Church, or in the architecture of St. Mary le Strand, both of which are by the same "hand!"

III. To any one less philosophical and placid in his temper than the late Sir John Soane was known to be, it would have been most annoying and mortifying to find that a certain "gin palace" has had the audacity to improve upon what he did at the Bank of England; for, while the latter building shows only an imperfect imitation of the Tivoli Corinthian, the other exhibits it fully and appropriately enriched according to the original; the frieze being ornamented with its festoons and bulls' heads. It is possible that Sir John would have contended that it was he himself who improved upon the original order, by either suppressing ornament altogether in the frieze, or else substituting the Vitruvian fret for sculpture, and thereby imparting to the whole that simplicity and chasteness which so conspicuously mark all his other works, including those unique samples of taste which he gave to the world in his never-to-be-forgotten *Designs for Casinos and Garden Buildings.* Whether that most extraordinary production be one of the architectural treasures that enrich his own library, I cannot pretend to say; for Sir John Soane did not care to enlighten us, in any degree, as to what those treasures really are, notwithstanding the *Description of the House and Museum on the North Side of Lincoln's Inn Fields* is minute and circumstantial, even to the point of being ludicrously so, in many other respects. We are informed, indeed, that among the books are to be found the works of Gibbon, Molière, and Rousseau (undoubtedly very great literary rarities indeed!); also, that he possessed a copy of the large French work on Egypt, and the illustrated Pennant, once belonging to that "unfortunate gentleman," the late Mr. Fauntleroy, together with one or two Italian books on architecture. Yet, these being all that are specified, it may very fairly be concluded that this splendid architectural library is but a very meagre and defective affair after all; because it is hardly to be imagined that Sir John would have selected for especial mention the books he has so particularly pointed out, at least not have confined himself to the mention of them alone, could he have made a greater display; for Sir John Soane was the very last man in the world to put his candle under a bushel.

IV. *Et tu Brute!* — even so, Goethe was a Palladianist; at least during his Italian tour. Still he is not a very formidable antagonist to the anti-Palladianists, because he merely insists upon the supereminent merits he chooses to ascribe to the architect, or fancies he perceives in his works, without attempting to define or analyse them. That he fancied a good deal more than he actually saw is undeniable, else he would never have said, as he has done, that the Villa Capra, near Vicenza, has four porticoes with *Corinthian* columns! The mistake, I allow, is only that of a single word; but, then, it amounts to an egregious blunder, which falsifies the matter he is speaking of altogether. It is as if he had called Cervantes the first of Portuguese writers, or Shakspeare the most wonderful of French dramatists. Neither ought it to pass unobserved that he is not writing of something that he merely casually observed, but of what made a particular impression upon him. I have, indeed, seen it stated in print, before now, that the portico of Covent Garden Theatre is *Ionic*, and that of the Post-Office *Doric;* mistakes that must at once satisfy every one that those who fall into them know not even the names of what they talk about. One of the most ingenious blunders of this sort upon record is that of Newton, the translator of Vitruvius, who has contrived to turn Hercules's club (*clavam*) into the *claw* of a lion.

V. It seems to be a tacit compact among draftsmen (far more scrupulously observed, too, than express agreements always are) to follow each other as closely as possible in every view they make of the same building. No matter though the subject itself be hackneyed till we absolutely sicken at the mention of it; the "thousandth and one" representation will show little, if any thing, more than any of the preceding ones. It is absolutely incomprehensible to me, how any one, calling himself an artist, can walk round St. Paul's, either without or within, and discover nothing but what has been delineated again and again. There are, at least, half a dozen perfectly fresh subjects to be met with in the choir alone: one of them in particular, an oblique view across it, close by the altar, would make an exceedingly picturesque architectural composition. In like manner, the ailes extending along the eastern part of the edifice would furnish several rather piquant bits of scenery to any one who had eyes for them. Nay, something might be made of a view across the Whispering Gallery. But, unluckily, this, and every thing else of the kind, appears to be a perfect *noli me tangere* with the people who undertake to *illustrate* Sir Christopher's cathedral. "Iteration damnable" seems to be their motto; therefore they themselves are fully entitled to the latter half of it.

VI. How happens it, I would fain know, that the architectural profession itself is considered a *noli me tangere* by all novelists and dramatists? While every other profession, every other class of society, is made to contribute its quota towards the materials employed by such writers, this alone is allowed to remain exempt and scot free. Can it be because it is so prodigiously dull as to afford nothing whatever capable of being rendered interesting? or so immaculate as to be altogether invulnerable to the satire which feeds upon such stale dishes as aldermen, lord mayors, stupid police magistrates, lawyers of all grades, physicians, apothecaries, old maids, musty bachelors, fashionables and the apers of fashionables, vulgarians both in high life and low life, and husband-hunting mammas, who themselves would be a match for any jockey on the turf? Is there no jockeying in architecture? has that profession no pretenders, no quacks, no charlatans, no empirics, no "wooden spoons?" Nay, has it not even one poor lackadaisical, hobbyhorsical enthusiast, out of whom some diversion might be extracted *pro bono publico?* Let Beazley give this his serious consideration; or else let Charles Dickens try whether he cannot start some fresher game than the "long established firm" he now deals with, and *Bozzify* some architect or amateur.

VII. I quote without comment, though it certainly affords matter for a great deal, the following piquant *morceau* from Webb; where, speaking of the environs of Lago Maggiore, he says, — "In review of this recent array of town and village and single house, in which every appurtenance is in every point of chastest elegance, it is a plain matter, that no one should venture to build even a stable without previous rudiments from such studies as are here, without exception, presented. The look-back on our English house-building is loathsome; but the Swiss enormity of stone wall, from the torment of which I am just escaped, I treat as the baboon airs of an impudent stone-mason: their pavilions, their pinnacles pointed into a spike, and sheathed in tin; their roofs, bristling into every horror of crookedness! Then their detached nondescripts, with pranking, in this part of red, and in the other, contravent (?), set out in green! I speak not of the Swiss farm-house, with its roof as tall again as the walls that support it; the buttresses that stick out from those walls, and the granaries and back yards (but that they are in front), that, in story after story of gallery, and lesser pendicle attainable by ladder, bespread, in glory of clumsiness, the house on all its faces; excrescences out of the house, and yet no part of the house; often as much in area as the whole of what the absolute walls enclose in interior. I allude exclusively to the gentleman proprietor's mansion; of the farther barbarity of which I would merely add, that in show, as in fact, the basement story is partly barn and partly coach-house, and that, with cognisance of the nose, part of it comprehends all the beastliness of the stable." (Webb's *Minutes of Remark*, &c., vol. i. p. 130.)

REVIEWS.

Art. I. *New Houses of Parliament.*

1. *Letter from W. R. Hamilton to the Earl of Elgin, on the new Houses of Parliament.* Pamph. 8vo, pp. 19. 2d edit. London.
2. *Second Letter from W. R. Hamilton to the Earl of Elgin, on the Propriety of adopting the Greek Style of Architecture in the Construction of the new Houses of Parliament.* Pamph. 8vo, pp. 65. London.
3. *A Letter to the Right Honourable Lord Viscount Duncannon, First Commissioner of His Majesty's Woods, Works, &c., in Explanation of the Proceedings of the Architects, Competitors for building the new Houses of Parliament, who petitioned for an Examination into the Propriety of the Selection made by the Commissioners appointed under the Great Seal to select and classify not less than Three, nor more than Five, Plans for the Consideration of the Committees of both Houses, and to report generally on the other Plans.* By Thomas Hopper. 4to. Price 2*s.* 6*d.* London.

The object of the first two of these pamphlets is, to recommend the Grecian style of architecture for rebuilding the Houses of Parliament, in preference to the Gothic style; and the third pamphlet may be considered as a criticism on the Commissioners, and on the successful architect. The three pamphlets are sold at so low a price, that such of our readers as feel much interest in the subjects treated of will, doubtless, procure them.

We have always given it as our opinion, that the competing architects ought to have been left to their own taste and judgment with respect to style; and we should have preferred the Grecian style, or some variety of it, such as the ancient Roman, or the modern Italian manner; because the beauty of this manner of building is much less dependent on local or temporary associations than the Gothic style. A public building, that is to last for ever, ought to owe no part of its beauty to mere novelty, for that will soon pass away; neither ought it to be in the style of any particular age, of any particular application, or even, if possible, of any particular country. If there is such a thing as a universal style of architecture, that certainly is the style that ought to be employed in public buildings; because these are for the use of future generations, as well as of the present. A style of building, to please for many ages, must derive its beauty solely from itself, and not from any extrinsic association whatever, either Grecian or Gothic. For this purpose, simplicity in the general forms, symmetry in the elevations, and an obvious principle of order or proportion in the arrangement or succession of the parts, with no ornament that does not appear to rise out of the construction, appear essential. These requisites, we think, might be more easily found in the Grecian than in the Gothic style.

The Gothic style, from its indefinite proportions and its picturesque effect, and, above, all from its so readily allowing of additions and alterations, seems particularly suitable for country residences, cottages, and churches; but we should not desire to see a post-office, a custom-house, a national bank, the courts of law, or the Houses of Parliament, in this style. Such is our feeling on the subject; but, as it is not that of a great many persons, we suppose it may be set down to the difference of taste. Another party might object to our doctrine of employing a universal style in public buildings, that they would cease to be historical monuments.

The following quotations appear to us some of the most interesting parts of Mr. Hamilton's pamphlets:—

> "I cannot resist the temptation to express the regret which I feel in common with many individuals with whom I have conversed upon the subject, that, in inviting the competition of the architects, every other style of architecture should have been professedly excluded from the competition, except the Gothic and the Elizabethan; an exclusion which has cramped the genius of many highly gifted individuals, and which seems to have originated in narrow views of the purpose and destination of a science, which has ever been held in the highest rank of the fine arts.
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> "There are strong grounds for believing that this is the first instance in the history of the world, in which orders have been issued from the highest authorities in a realm, that a great national public work of this description, in which no religious feeling was concerned, should be executed in a style of bygone times; more especially that those times should be selected in preference, in which the cultivation of the fine arts had made comparatively small progress, and of which there are no existing examples in this country (I allude particularly to the Gothic), but of places of divine worship, or erected for monastic or collegiate purposes.
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> "It is notorious to all who have attended to the history of architecture, that every age and every country have progressively formed to themselves each its own peculiar style and character; and, excluding from the question those cases where there may have been a self-evident decline from good to bad, from the beautiful to the deformed, from simplicity to meretricious ornament, from cultivated to barbarous periods, it seems right that each age and each country ought to hold fast to that style, which, whether foreign or indigenous, circumstances and improved knowledge have introduced into general practice. The monuments of ancient Greece and Italy, as well as those of modern Europe, bear witness to the truth of this position.
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> "Architecture had thus become a mirror of the improvement of science in various periods; and the antiquary who visits our cathedrals distinguishes the

productions of the successive centuries from the Conquest to the Reformation; whereas the principle now put forward, by confounding times and usages, would convert our public buildings into architectural romances." (*First Letter*, p. 5.)

"It is deeply to be regretted that now, on an occasion which was regarded by the whole of Europe as likely to lead to the construction of an edifice which, with the resources of the British Empire, and the talents and ingenuity of British artists, might eclipse every thing of the kind which Europe had yet seen, some unfortunate combination of prejudices, or a doubtful view of useless consistencies, may possibly throw us back into the middle ages, and may tell us that all we have been learning, all the progress we have made, all the principles our artists have been taught to look up to, as the best and only guides in their profession, are to be of no avail; that Gothic barbarism is again to be allowed to triumph over the master-pieces of Italy and Greece; and that Britons are henceforth to look for the model of what is sublime and beautiful in art to the age of ignorance and superstition.

"And yet there is but little doubt that this temporary rage for Gothic architecture would never have controlled the talents and taste of the English of the last or present century, if it had not been for the singular notions of one individual, an ingenious trifler, as Gibbon calls him, the late Horace Earl of Orford, who, in the indulgence of a peculiar fancy in ornamenting an insignificant villa, and from a desire to give birth to a new fashion, employed a long life, and the influence he possessed amongst the upper classes of society, to introduce a passion for what he styled the charming venerable Gothic. His disciples copying, as so frequently happens, the faults chiefly of their original, ransacked old houses and barns for the furniture and ornaments of forgotten times; and they often set as much value upon the possession of a piece of glass from a Gothic window, an uneasy Gothic chair, or a ricketty Gothic table, as others did upon the finest works of antiquity. Early in the present century the magical creations of the Waverley novels, appealing as they did to all our feudal and ancestral recollections, came in aid of the delusion; and this, again, was fostered by the indolence of amateurs, who availed themselves of the arbitrary licentiousness and lax principles of fitness and proportion, which Gothic architecture admitted, to play with it ad libitum; satisfied if they could produce, by irregular and fanciful combinations of turrets, by painted windows and grotesque sculpture, oriels and buttresses, what they called a pretty and picturesque effect." (*Ibid.*, p. 8.)

"In making use of the expression "a doubtful view of useless consistencies," I allude to the supposed reason for which the Gothic style was one of the two to which the competitors were limited; namely, the presumed necessity of the new building harmonising with the three adjoining monuments, Westminster Hall, the Abbey, and St. Stephen's Chapel: but that this principle was not considered as absolutely indispensable, is evident from the alternative offered, of the Elizabethan style, which, as generally understood, has little or nothing in common with the character of any one of the three buildings above named. But wherein does this necessity exist at all? It would be difficult to prove it by any reasoning à priori, and there are many historical precedents against it. When William II. built the Hall, he did not prescribe that it should be constructed after the style in vogue during the dynasty of his Saxon predecessors, though with our modern notions it might have been flattering to the body of the people; and when the same building was restored under Edward III. and Richard II., the style prevailing under these sovereigns, not that of three hundred years before, was adopted. The chapel of Henry VII. is in a very different character from the Abbey of which it forms a part. The Italian portico which Inigo Jones annexed to the western end of old St. Paul's was one of his most admired works, and did not shock his contemporaries; the noble palace which the same architect projected for Charles I., and which must have been laid open to the Hall and Abbey, was designed according to the style and taste of the day, not in accordance with its more ancient neighbours; nor has the vicinity of St. Paul's been deemed, even in these fastidious days, a sufficient reason for precluding Sir Robert Smirke from presenting to us in the new Post-Office a happy specimen of the simplicity, harmony, and beautiful proportions of Greek architecture." (*First Letter*, p. 13.)

"But what is this peculiar charm in the Gothic style? what are its advantages? where its delightful associations? It is certainly far inferior in simple grandeur and massive proportions to its predecessor, the early Norman, which derived these qualities from the Greek; and it may well be presumed to have been in great part the offspring of the overgrown wealth of the Romish hierarchy. When those who were receiving unlimited incomes from the soil, and were possessors of a large portion of the most productive districts in the island, had no other means of employing their superfluous riches, they set themselves about raising enormous structures, avowedly to add to the splendour of religious worship, but frequently also to maintain and extend their influence, to display their power, and to give employment to a people of serfs. Hence alone can we account for the excessive profusion of ornament with which these structures, grand and imposing as they are, were frequently overloaded; tiers rising one above the other of statues contracted for by the yard or ton, clusters of thin tapering columns, with towering arches above them, beguiling the sight, and substituted for the massive and simple forms of a preceding age. Though well calculated to astonish the ignorant, they gave to the mass of the people a false impression of religious awe, which was no otherwise connected with religion itself, than as it served to instil a respect and terror for those who presided in them, and who preserved by these means a paramount control over the architects, and their subordinates, the painters and sculptors. What other view of the subject can satisfactorily account for the gorgeous churches raised in the midst of the poorest populations of distant villages? or for the useless and vain accumulation of pinnacles, and turrets, and spires, ramified windows, ornamented niches and canopies, falsely delicate traceries, grotesque and irreverent shapes, and the profusion of unmeaning excrescences lavished indiscriminately over every part of such buildings, offering as they did extravagant contrasts of gloominess and decoration, and not unmingled with the strangest combinations of Christian and profane idolatry? To such an extent was the system carried, that it often happened that bulls were issued from Rome, which served to inflame the pious ardour of kings, nobles, and people, by holding forth absolution for penances for sin, as a reward to those who came forward with their contributions." (*Ibid.*, p. 15.)

"We are sometimes told that, because the projected building is for the Houses of Parliament, it ought to be in harmony with the period of time when these were first established, or more properly confirmed, as the guardians of our constitution. But who is to fathom the depths of history to ascertain the first, and what data are we to assume for fixing the second, period? We have, to be sure, a wide range and ample choice between the days of the Wittenagemote and the passing of the Reform Bill. But, upon this principle, which would put an end to all hopes of improvement in taste, and stifle every attempt at originality, our theatres ought to be constructed as they were in the days of Shakspeare; our courts of justice should be on the model of those which were founded by Alfred, the great conditor Anglicanarum legum; our town halls should revive to us the taste of the days in which municipalities were first imported from Italy into England; our churches would represent the subterranean caverns of the primitive ages; and the royal palaces must ever have remained shapeless and gloomy castles.

"The architecture of a country, like its constitution, must spring up out of the exigencies of the times, and character of the people: it should be allowed to grow with their growth, and keep pace with them in their progress to moral perfection and greatness. Architecture and the other fine arts have a claim to the same favour, which we show to philosophy, science, and literature: where these are concerned, we do not think ourselves bound to submit to the trammels of ignorance, because our ancestors were blind to the true principles of knowledge; but we go in search of those principles in the secret paths of nature, and by studying the master-pieces of Greece and Rome. If we denied ourselves this advantage, 'we should be keeping mankind in an everlasting state of infancy, and laying an eternal bar against all the improvements of our reason, our knowledge, and our happiness. We must have blundered on in successive generations, amongst absurdities and thick darkness, and a hundred useful inventions for the happiness of human life had never been known.' We have only to follow the same road in the pursuits we are now treating of. It will lead us to feel that every thing beautiful in art is also true to nature; and our next step will place us on the Acropolis of Athens, of which we may still say, with Cicero, 'domicilium remanet studiorum, quibus vacant cives, peregrini fruuntur.'" (*First Letter*, p. 18.)

"Art is essentially the imitatress of nature: it is the λόγος τοῦ ἔργου, the right reason of the thing done; and every art, and that of building amongst others, is defined by Aristotle to be the habit of producing with judgment, and agreeably to the rules of reason, what is good for man. The efficient cause being in the maker, not in the material, it should be directed not merely to attain its purpose, but to attain a good purpose: it is the result of the experience of many and various conceptions; it is the judgment by which one object is selected out of many similar objects (*Aristotle's Eth.*, b. vi. c. 4.; and *Metaph.*, b. i. c. 1.); it must strive to combine the beautiful with the useful; and as there are many forms of government, but there is one which is the best fitted to the genius of man, which is the best, so, also, in architecture there are many styles, but one only which is universally acknowledged to be the best. Such were the opinions of the wisest philosophers amongst the Greeks, of those who lived and taught amidst the temples and stoas of Athens, and who knew that they guided the feelings of an enlightened people.

"As virtue is the perfection of reason, so is art the perfection of nature; it is nature elevated and improved: and, as wisdom is not the creatress of man, but has received him in a state of embryo from nature, to improve him by faithfully following up the principles which she has engrafted, so does the artist, in the progress of his work, keep his eye constantly fixed on that archetype, and brings it to perfection under her guidance. (See *Cicero*, *De Fin.*, iv. 13.)

"It is idle to discuss whether architecture be a science or an art. It is one of its chief merits, that it is both the one and the other, that it combines and comprehends the advantages and the results of the two. It is the union of power with beauty, the alliance of Vulcan with Venus and the Graces. It is based upon science, and it culminates in art. It presents to our judgments, on the one hand, in 'material works, constructed according to rules and canons,' all the various developements of the properties of nature, of mathematical truths, and of inventive genius; on the other, it reconciles convenience and grace, it gratifies our senses, it satisfies our notions of harmony and consistency, it marks the progress of the human race in the powers of composition and in the delicacies of taste, and it perpetuates to future generations the thoughts, the wants, the occupations, and the aspirations of their predecessors.

"The three sister arts of architecture, painting, and sculpture flourished and attained their highest eminence in the age of Pericles, and on one and the same principle. The first, though not strictly an imitative art, or endued with the same powers and the same end as sculpture and painting, in the imitation of life and action by form and colour, is, however, like them, founded upon the real basis of human wants and feelings; exercises and gratifies our purest tastes for simplicity and truth; like them, must be judged upon the principles of sound criticism; and, like them, must be calculated for durability, fitness, and beauty." (*Second Letter*, p. 6.)

"As the apple falls to the ground by the same laws which regulate the universe; as the breath which animates the unseen millions made known to us by the microscope is the same which enables the eagle to soar amongst the Alps; so is it not the least charm of the architecture of the Greeks, that it is based upon the same principles which render the cottage fit to protect the peasant from the storm. 'Naturam intueamur, hanc sequamur,' was the motto which presided over this study. The rude stems of the oak or willow, placed against each other in parallel lines, the horizontal beams which rest upon them, the transoms by which they are connected together, the overhanging plank to protect the foundations from the rain, the tiles or shingles which fill up the interstices, and the gable end which terminates the roof, were, by the taste and judgment of a people happily organised, and placed in a country abounding with the most useful materials, transformed into the majestic shaft of the Doric column, the imposing architrave, the strongly-shadowed triglyph, the projecting cornice, the deeply-indented soffits, and finally into pediments, destined, with the help of the graphic and the plastic arts, to present to the senses of the Greeks either the imaginary occupations of the inhabitants of Olympus, or the great deeds for which their ancestors were thought worthy of an admission into those regions.

"The simplicity of the architecture of the Greeks, with the gradual improvement of whose rational faculties, truth and nature, in all the departments of knowledge which they could reach, continued to extend their sway, may be compared to that of their tragic drama. The same state of civilisation produced the two, the same people admired them; and they were both under the regulation of simple but strict rules, grounded upon an accurate investigation of the objects around them. As the merits of the one consisted mainly in the developement of the ordinary affections of the soul, under the greatest possible excitement, in the course of some important and well-known action, it required no intricacy of plot, no refined sentiments, no variety of action, no fluctuating play of the passions, no strange inventions, no surprise in unravelling a new story; but the language in which it was composed was pure, beautiful, correct, and luminous throughout; the dialogue, ever true to nature, presented the precepts of philosophy harmonised by the Attic muse, and the choruses depicted the common feelings of all who heard them, as men and patriots, in strains accompanied with exquisite melody, producing the most exalted emotions. In the same manner their manly Doric architecture, which was truly 'nature methodised,' the only architecture, says Addison, which reconciles grandeur with regularity and proportion, admitted no meretricious display of ornament to break the unity of the design. Every part of it spoke to the eye at once, and was intelligible to all; nothing useless, nothing out of its place. Thus the Parthenon became "the very school of architecture and sculpture combined, where each gave additional lustre to the other, and augmented its magical effect' (See *Hughes's Travels in Greece and Albania*, 2d ed., p. 257.)'; and, if the sacred buildings of Asia presented something more gorgeous, more decorated than those of Athens and Proper Greece, these alone were regarded as the best models, and were the tests by which others were judged; 'as Cicero purified his luxuriant Asiatic diction by the study of the Greek writers of a better time, in the Lyceum and in the Academy; and he thus introduced into his native language a sweetness, a grace, and a majesty hitherto unknown to the Romans.'" (*Second Letter*, p. 8.)

"What can be more historically appropriate than a building which shall remind us, not of those dark ages when the representatives of our Commons crouched before the commands of a despotic sovereign, but of those brighter days when, under the banners of freedom, the human intellect attained its highest eminence; whose annals, illustrious by names still held up to us as models of eloquence and patriotism, we learn from our infancy; from whose language and deeds we imbibe our taste for literature and for the arts; and from whose works, apart from religion, we draw the purest principles of public and private conduct. The parliamentary language of the present day, so familiar to our ears, would in former times have consigned our orators to a dungeon or a scaffold; but within the walls now to be erected we may look forward to the fearless tones of a people resolute to be free, opposing equally the rule of a few and of one; and to the no less glorious stand of the hereditary guardians of the constitution against the reckless innovations of licentious tribunes." (*Second Letter*, p. 23.)

"No one, even the staunchest advocate of the Gothic, maintains its superiority over the Greek abstractedly, either in respect to harmony, or proportions, or majestic simplicity, or convenience. When our architects begin their studies, they are not put to learn the principles upon which a pinnacle must be placed upon a turret, or the proportions which the oriel window should bear to the hall, or even to the strength of the buttress required to support the wall, which would be crushed without it: these are subsequent considerations, which must be learnt, in order to enable them to execute commissions imposed upon them by individuals; but they do learn the distinctive characters of the Greek orders, the proportions between the height and diameter of a shaft, those of the echinus, the mutules and the abacus, those of the entablature, and the pediments; these are what the best masters in the best times, and in the most civilised communities, set before their scholars; and these are the principles which, if left to their own judgment and genius, they would all wish to put in practice. Let it not be said, then, that we run away from our own principles, when an opportunity is offered of placing before the eyes of Europe what we can effect; or that we are fearful of competing with others, in a monument founded upon the same principles which are now acted upon every where else. Gothic architecture having, in truth, no strict rules of proportion, size, height, mouldings, decoration being all arbitrary, you will there indeed be safe from criticism; judges, amateurs, and architects may all have different opinions, and be all right, or all wrong; what was inadmissible in one country, or in one generation, will meet with its archetype in another; what was never before seen in England, will be defended by examples from Rouen, or Auch, or from Cologne; and we shall have such a medley as eye never saw, or pen never drew before.

"'They talk of principles, but nothing prize,
And all to one loved folly sacrifice.'

"These discordant characteristics, if we could fancy them endowed with sensibility, would not be more surprised to find themselves in juxtaposition to each other, than were 'the Iberian, the Arab, and the Goth, when enlisted in the service of the same Christian emperor;" and I fear that the warmest admirers of the true Gothic will be apt to exclaim, Εὔδει ἡ παλαιὰ χάρις, 'The graces of the olden time are extinct;' for we can no more pretend to build even these structures with the same splendour, and the same prodigality of enrichment, preserving at the same time the same characteristical proprieties, which our ancestors were proud to display in the fourteenth and fifteenth centuries, than to restore our language to what it was in the days Chaucer or Shakspeare: whilst the one and the other were national, they were perfected by the spirit of nationality; they were then really consistent, because they were progressive: improvement is always in season, a retrograde movement is always out of place." (*Ibid.*, p. 33.)

"Homer, says Hume, who pleased at Athens and at Rome two thousand years ago, is still admired in Paris and in London. All the changes of climate, government, religion, and language have not been able to obscure his glory; and, whilst the world endures, the works of genius will maintain their authority over the minds of men. The general principles of taste are uniform in human nature: we should be on our guard against their being distorted by individual prejudice or exclusive habits; and, though we must always make allowance for the continual revolutions of manners and customs, the true is ever good in art, as morality, the offspring of conscience and reason, is ever the same in conduct. It should also be remembered, that 'the same excellence of faculties which contributes to the improvement of reason, the same clearness of conception, the same exactness of distinction, the same vivacity of apprehension, are essential to the operations of true taste, and are its infallible concomitants.' (See *Hume on the Standard of Taste.*) But where are we to look for a standard of taste in architecture but to Athens, and to the buildings which were contemporary with, or which were erected in imitation of, her monuments? 'These have ever, in all civilised times and countries, been looked up to as the polar star by which, after sinking in the deepest barbarism, taste has been guided in its restoration to splendour, and the observation of which will probably ever be the surest preservative against its future corruption and decay?' (*Mitford's History of Greece*, vol. ii. p. 2. 4to ed.) I trust it has not been reserved for the present age to disprove this augury. Where are we to seek for the cause of the alarm?

"The danger exists; and, I fear, it has been too truly said, that a proof of the fatal indifference prevalent amongst the upper classes of society in this country to the beauties of Greek art, or, in other words, to beauty in art, may be seen in the almost total neglect by them of those immortal monuments of Greek sculpture, which are preserved in the British Museum; to one main cause of which neglect your Lordship so justly alludes in the extract of your letter contained in mine of July to you. Day after day have I visited that establishment, either alone or in company with foreigners; sometimes with real lovers of the art, but much more frequently with those whom I had pressed into the service, and whose curiosity I had excited by describing to them, as unknown, and almost as unheard of, the marvels which they would see; and it has scarcely ever happened to me to observe there any fair proportion of the individuals to whom I allude. The inconvenient site of this magnificent foundation, out of the range of the busy world of the metropolis, is certainly one reason why it is so little visited by those who, from early associations, liberal education, cultivated and natural taste in other lines, possessing, too, an eager desire to see every thing remarkable in foreign countries, ought to be the most capable of appreciating such monuments. But this situation is not the only, nor do I think it (for we know that it is visited by thousands of another class) the principal cause of this untoward state of things. It lies, I fear, deeper in the individual man: it is a consequence of the defective education given in our best schools, of the total absence in the course of that education of every instruction calculated to draw forth the feelings of the youth for art, as art; or to enable him, in his intercourse with the practical professors of art, either to form or to cultivate a judgment of the higher orders of beauty, as exemplified in the master-pieces of Greece. Attempts are made to account for this deficiency by alleging that we are a nation not susceptible, like the Italians, or others born under more genial skies, of this class of impressions; but this is rather an excuse for indolence and ignorance; and should, in truth, be attributed to a want of that æsthetical knowledge, which is the science of enquiring into and forming a correct judgment upon works of imagination, in literature and in art, by comparison with others, and according to the invariable rules of true philosophy, and the principles of logical deduction. This, however, is not necessary to be studied as a professed science; but what ought to be taught are, the first principles of design as the groundwork of taste and feeling for art, and a familiarity with the best productions of antiquity, their peculiar characteristics and attributes, and the principles, whether moral or physical, on which the ancients cultivated the fine arts, in such endless profusion and variety of material, and in all attained an equal degree of perfection." (*Second Letter*, p. 42.)

"There have been six principal epochs in modern history, at each of which the knowledge of ancient art has made gigantic strides: the first was that in which the increased wealth and learning of the Italians in the age of Leo led the way, by excavations for palaces and churches, to the recovery of so many lost remains from the ruins and rubbish of Rome, which, with the revival of literature and the liberal patronage of the great, contributed to form the eminent artists of those days. The second was the discovery of Herculaneum and Pompeii, which first brought us acquainted with the beautiful forms familiar to the ancients in their household utensils, and with specimens of their mural paintings, though these, in truth, were in part made known when the palaces of the Cæsars and the baths of Titus were cleared in the sixteenth century. Then came the excavations in Hadrian's villa below Tivoli, the vases of Nola and of Magna Græcia, the speculations undertaken to excavate at Veii, and in the environs of the eternal city, and the contemporaneous munificence of Pius VI., the real founder of the Museum of the Vatican; together with the liberality of our own countrymen in purchasing some of the most precious monuments which these operations brought to light. The fourth epoch was marked by the visits of our learned travellers and artists to the ruins of Balbeck and of Athens, and of the lesser Asia, and by the successive publications of the Society of Dilettanti. Your Lordship then stepped forward to rescue from the hands of barbarians, and eventually from the more destructive struggles of civil war, the chefs-d'œuvres of Phidias, which we had already begun to appreciate from drawings and measurements and engravings. The sixth and last great event of this character was the discovery of the tombs of the Greek inhabitants of parts of Etruria; and the last fifteen years have produced, from this rich and still unexhausted mine, proofs of the extensive range and high quality of Greek art, which we could not have gleaned from history, and which are furnishing us with more data, whence to pursue our reciprocal illustrations of art by literature, and literature by art, than all which we possessed before.

"These are a few of the points to which the attention of the youth of our upper classes ought to be directed; and when we add to a knowledge of such historical details a familiarity with the works of the ancients, either by casts or engravings, and the literary labours of those who have best illustrated these triumphs of genius, and have accompanied the whole with a study of the chief characteristics of the Greek and Roman medals and lapidary inscriptions, the best correctors and lights of history, geography, mythology, and archæology in general, we may then hope to see a genuine feeling for beauty in art pervade those classes, which ought to give the tone, and perform the part of judges and protectors, to others, who look up to them for employment; for such as is the demand, such will be the supply. If we are willing to pay for indifferent performances, because we are satisfied with mediocrity, we shall never be disappointed: it will come to our doors in shoals, unasked for, and not wanted. The plant that is not well trained by the hand of the gardener, will luxuriate in barren poverty, and will rival the weed of the field; but, if those who are to guide know and put in practice the rules of culture, the production will reward them for their toil, and reflect honour on the hand which reared it." (*Second Letter*, p. 46.)

"But, in general, attention is exclusively bestowed, and at too early an age, on the difficulties of grammar, the niceties of criticism, and the laws of prosody; and much time is misspent in fruitless endeavours to teach the art, or rather knack, of composition in languages, which are no longer of any application for that purpose; and therefore not only useless, but mischievous in its effect, from giving to the pupil the notion, that he is toiling for that which he will never be called upon to put to account, and which if he were to attempt, he should be laughed at for his pedantry. In the mean time years roll on, and the youth has lost all feeling for the real beauties of the books he reads, because they are only put into his hands to teach him a knowledge of words, of long and short syllables, of accents, and the varieties of dialects. Though it cannot be denied that some history, some geography, some mythology are at the same time taught, these studies are too often treated as subservient to a knowledge purely of the language; and the one is so mixed up with the other, 'the drilled dull lessons' form such a confusion in the young mind, that he becomes sick of the most beautiful works of man before he has got half through them; and the natural consequence is, that he throws them away the moment he becomes his own master. We are too early accustomed to a familiarity with these beauties to feel a proper relish for them; and when we might relish them, they pall upon the appetite. Even Homer, the great legislator of the Greek mind, is neglected because too early taught. To learn the dead languages is certainly the first element of a gentleman's education; but how much better, how much easier would they be learnt, if they were taught, as we are taught living languages, and as the great learned of past days were taught—from simple books, from dialogues, from vocabularies, by interrogatories, prælections, in familiar conversation, by which, in a few short years, during which the accompaniments of this elementary education must also be attended to, and well imprinted upon the memory, such as history, &c., the ordinary difficulties of a strange language would be conquered, a large command of words and inflections would be obtained, and the youth would gradually encounter the higher works, with ardent curiosity to become acquainted with their beauties; and with a sufficient stock of information to enable him to understand, and fully to appreciate, them. As it is, how often does it happen that, whilst engaged in reading the sublime choruses of Æschylus, or the splendid periods of Demosthenes, or the nervous harangues and narratives of Thucydides, is he at once brought to a stop, because he does not know who was the father of Agamemnon, by what different principles Pericles and Cleon led the people of Athens, or the duties and liabilities of a Trierarch.

"We learn from Vasari, in his life of Sansovino, that 'the construction of the library of St. Marc at Venice, which had already in his time cost 150,000 ducats, was the signal for the nobles of that republic to improve their own private palaces. Previous to this great work, their houses and palaces were all of one character; the same ornaments, the same proportions, and old-fashioned, without consulting the peculiarities of the site, or the purposes required: but, after this time, the public and private houses were constructed upon new plans, and an improved arrangement; nor was money spared; the Palazzo Cornaro alone cost 70,000 ducats.' Ought we not, therefore, also to bear in mind, that the building which is now under consideration, and which is to be the most important in its destination, and the largest in size, of any which this island can boast, is to supply the means of transacting the legislative business of this vast empire, and will be daily and hourly frequented by the élite of our countrymen, in every class of society? Whatever it may ultimately become, it will be regarded as a part and parcel of the intellect of the age, as the model par excellence, the example in character, art, and decoration, of what is to come after. We ought to be aware, too, that there is a certain dependence of genius itself upon the public taste, and, consequently, that if we give a wrong direction to this taste, the former will be equally led astray, and we may be unwittingly guilty of checking in their first budding the brightest and most aspiring gifts of nature. Let us, then, be more than usually careful of what this exemplar is to be. We are not only building for our own purposes, and for those of posterity, but we are professedly, by the very fact of opening a competition, proclaiming to the present and future ages, that our most accomplished and best informed gentlemen have prescribed and judged what they thought to be the best, and that it was the best which our artists could execute. It will therefore be the mirror, by which those who follow us are to estimate our taste and our resources, the index of the advancement which the early part of the nineteenth century had made in the fine arts; it will be the test, by which we are to prove ourselves superior to our predecessors, and at least equal to our contemporaries, in architecture, as in science, in manufactures, and in commerce.

"There is a passage in Plutarch's life of Pericles, which has never, I think, been fully understood, and has therefore given rise to, or affected in one way or another, the various theories on the ornamental architecture of the Greeks, but which seems to bear directly upon the subject in hand. The biographer sums up his eulogy on the talents and success of Phidias in embellishing Athens under the direction of Pericles, in the following manner:—After alluding to the short space of time which, beautiful and perfect as they were, was consumed in the erection of the Parthenon and the Propylæa, he says, 'Hence we have the more reason to wonder, that the structures raised by

Pericles should be built so quickly, and yet built for ages; for as each of them, when finished, had the venerable air of antiquity, so even now they retain the strength and freshness of a modern building. A bloom is diffused over them, which preserves their aspect untarnished by time, as if they were animated with a spirit of perpetual youth and unfading elegance.' This expression has been quoted, as a proof that the marble of which these edifices were constructed was capable of resisting the effects of time, more than any other material; others, again, make use of it in reply to the assertions which have been made, particularly of late years, that they were covered more or less with a coating of colour, and the several mouldings picked out with various hues of red, blue, yellow, and gold (See *Trans. of the Institute of Br. Arch.*, 1836); for if this, they say, had been the case, we cannot suppose that such colours could have remained uninjured for six centuries, which must have materially affected the outward appearance. But it is evident that the observation of the biographer points to a much higher merit: he did not mean to praise the material used by Phidias, which, in truth, was the common produce of the neighbouring hills; nor its superficial brilliancy; nor the skill of the painter, if this additional decoration had really been employed; nor the mechanical expertness of the artisans; but he gave his willing testimony, as a philosopher and as a man of taste, who was well acquainted with all the rival edifices of the same nature, which abounded at that time throughout the Roman world,—that the buildings of Athens shone preeminently above them all by their inimitable beauty and perfection, by the magnificence with which they were designed, as well as by the elegance of their execution; that these eternal monuments of her glory were founded upon the true, universal, and eternal principles of science, order, and beauty; THAT, THEREFORE, AS FROM THE FIRST THEY HAD NO ESPECIAL CHARACTER OF NOVELTY OR EXTRAVAGANCE, SO TO THE LAST WOULD THEY PRESERVE THE 'PURPUREUM OS' OF PERPETUAL YOUTH. The conceptions of genius had discovered the true point, where massiveness, harmony, and tasteful ornament were happily combined; where every part of the architecture could readily be accounted for on principles of reason, and the demands of science; and where the minutest examination contributed only to increase the admiration produced by the first impression. Plutarch judged of a work of art, as Cicero and Quinctilian judged of eloquence:—that that degree of ornament only was allowable, "quod non plus minusve est, quàm decet—vitium esse ubique quòd nimium est"—that nothing improper or out of place was ornamental, and that true beauty could never be separated from utility. 'Ornatus virilis sanctusque sit; nec effeminatam levitatem, nec fuco eminentem colorem amat; sanguine et viribus niteat.' Quinct. de Eloq. L. viii. c. 3. What a contrast of feelings will be the result of a Gothic House of Parliament! At a period of time when the greatest exertions are making to get rid of all preconceived notions handed down to us from a Gothic ancestry; when we are told that every thing Britons have held sacred for centuries, in law, morals, religion, and philosophy, are to give way to the march of intellect, and to be tested by the public opinion of the day; we are to be consoled by the reflection, that in one department of reason, at least, we may go back to and glory in an humble copy of the gloomy mansions of our forefathers. True it is, that what is now to be built, will, like the Parthenon have the venerable air of antiquity; or, at least, the best exertions will be made to attain that end. But will it, like the Parthenon, assume the freshness of youth for our posterity? Will its autumn be as brilliant as its spring? Will it excite their admiration, after the lapse of centuries, for its chasteness, its propriety, and the harmony of its parts? Will it picture to them the feelings and the modes of life congenial to those who raised it?" (*Second Letter*, p. 53.)

"The architecture of the Goths, which, perhaps, was nothing in the main but the degraded Roman, the result of ages sinking deeper and deeper into barbarism, and which was totally deficient in that which forms the elements of real beauty (like the media officia of the Stoics, which never possessed the perfectum honestum, quod omnes numeros habet, but were merely similitudines honesti), can only present, even in its greatest perfection, that species of beauty, which strikes as something imposing and beautiful as a mass, 'cumulatè videtur perfectum.' The common mind is incapable of perceiving in it what is defective, or why it is imperfect; but, as far as it does comprehend, it thinks that nothing has been overlooked. Cicero compares this species of approval to that which is passed upon poems and upon pictures by those who are pleased with, and who praise, what is not deserving of their praise, but who, when better informed, easily change their opinion, 'ob eam, credo, causam, quòd insit in his aliquod probi, quod capiat ignaros, qui iidem, quid in unâquâque re vitii sit, nequeant judicare. Itaque cum sunt docti a peritis, facile desistunt a sententiâ.'

"In all complete styles of architecture, to produce a satisfactory result, the decorative members of the building ought to be at the same time efficient parts of it. The eye and the reason are then equally gratified; but when, as in the Gothic, the apparent frame is totally different from the real one, and weak forms, as well of weight as of support, are superinduced upon the mechanical construction, an illusion is produced, which may give us a partial pleasure, but necessarily leads to a confusion of ideas; and the facility with which the fancy may create these merely decorative compositions, the avowed objects of which are to play with the imagination, and to substitute falsehood for truth, is sure to lead to the indulgence of an impure taste, and to all the other discrepancies which must result from an attempt to harmonise two contending principles.

"Even the most splendid Gothic productions of modern times are but meagre pigmies in comparison with our most ordinary cathedrals. The great mansion at Eaton would appear poor and dwarfish, if brought into juxtaposition with its near neighbour at Chester, the least remarkable of our diocesan churches." (*Second Letter*, p. 57.)

"We are about to take a step without sufficient consideration, without looking to principles, and without even the semblance of ascertaining the feeling of the public. Errors, however trivial, are of great consequence in great works. What would be the result of one great error, embracing the whole work? We cannot be too cautious before we decide—we are told it is never too late to mend—but a late repentance comes not unaccompanied with disgrace, and, in this case, with enormous expense. When the deed is done, we may wait long, and in vain, for another chance; nor can we expect either the lightning to descend from heaven, or another burner of tallies to commit an act of folly from below, to enable us to repair our errors. Let us then at once reject our toy, as Minerva threw away her flute, for its unfitness either to instruct our minds, sharpen our intellect, or elevate our sentiments." (*Ibid.*, p. 59.)

With respect to Mr. Hopper's pamphlet, it appears to us that, if the author had sifted the evidence on both sides of the subject on which he writes, given the essence of it in one page, proposed a remedy for like cases of a similar kind in another, and published all his documents in an appendix, he would have been more read and better understood; but, instead of this, he appears to us to have overwhelmed his subject with details, extracts from reports, and from speeches made in Parliament, which occupy 38 pages; and, as far as we can discover, he has not arrived at any general principle for the guidance of Parliament, or the public, in future. The following paragraph, placed at the end of the letter to Lord Duncannon is all that we think will be of interest to those of our readers who have not been competitors; and those that have will, as we have already observed, no doubt become possessors of the work.

"As it is apparent, by the foregoing statement, that Mr. Barry's plan (No. 64.) did not comply with the particulars required, and, therefore, ought to have been rejected by the Commissioners, in conformity to the notice given in the *London Gazette*, Nov. 3. 1835; and, as the Commissioners state that they did not feel warranted in rejecting that design, because, in their opinion, the noncompliances were of little consequence; a copy of Mr. Barry's block plan (No. 64.) is produced, to show the importance of those omissions, and the inadequacy of that design. And, as the committees have been induced to believe that the new plan delivered by Mr. Barry was plan 64., with some improvements, a copy of the block plan of the new design is also produced, that the public may judge whether the Commissioners were justified in disregarding the resolutions of both Houses of Parliament, in favour of a design which has since been relinquished.' And, as the honourable member for Tewkesbury has stated (*Mirror of Parliament*), that not one of the designs exhibited had strictly conformed to the specifications (although the Commissioners had before stated that they had complied with the specifications, which contradictions might be considered, perhaps, as a sufficient answer to the honourable member's statement), Mr. Wilkins has publicly contradicted it, and offered to subject his plan to the examination of competent persons; and I have no doubt that all the practical plans would equally have disproved the honourable member's statement, if they had been subjected to the strict examination which I am desirous should be exercised upon my own plan; and for that purpose I propose to submit a copy of my plan in a separate publication.

"The plan will prove my interpretation of the 11th resolution of the Committee of the House of Lords:—That in the specification of the several measurements which have been adopted, the Committee has had it in view to afford a general guidance to the architects in preparing their plans, without intending to limit them to the precise dimensions prescribed for each room; with the understanding, however, that the several areas should not in general, be less than the size specified." (p. 38.)

ART. II. *Contrasts; or, a Parallel between the noble Edifices of the Fourteenth and Fifteenth Centuries, and similar Buildings of the present Day, showing the present Decay of Taste; accompanied by appropriate Text.* By A. Welby Pugin, Architect. 4to, pp. 50, pl. 16. London, 1836.

IN the Preface, the author trusts "that it will not be imagined" he has acted from any "private feelings towards those modern professors of architecture" whose works he has "placed in comparison with similar edifices of a more ancient period."

"I hope it will be acknowledged that I have conducted the comparison with the greatest candour; and, in collecting the works of the leading men of the day, I have placed the architectural productions of the nineteenth century in fair contrast with those of the fourteenth and fifteenth. That the former edifices appear to great disadvantage, when thus tried by the scale of real excellence, will be readily admitted by all who are competent to think on the subject; and I hope this work will prove how little title this age has to one of improvement on the score of architectural excellence, when, in truth, that science is at a very low ebb; in which state, I fear, it will remain, unless the

> same feelings which influenced the old designers in the composition of their works can be restored; a result which, though I most fervently wish, I dare not at present hope for; but I feel thoroughly convinced that it is only by similar glorious feelings that similar glorious results can be obtained."

This quotation will give the reader the best idea which can be done without the assistance of plates, of the kind of "contrasts" which he has to expect. We shall now examine the letterpress of the different chapters into which the work is divided.

Chap. I. *On the Feelings which produced the great Edifices of the Middle Ages.* The wonderful superiority, Mr. Pugin observes, of the buildings of the middle ages must strike every attentive observer: and the decline of this taste he endeavours thus to trace: —

> "It will be readily admitted, that the great test of architectural beauty is the fitness of the design to the purpose for which it is intended; and that the style of a building should so correspond with its use, that the spectator may at once perceive the purpose for which it was erected.
>
> "Acting on this principle, different nations have given birth to many various styles of architecture, each suited to their climate, customs, and religion; and, as it is among edifices of this latter class that we look for the most splendid and lasting monuments, there can be but little doubt that the religious ideas and ceremonies of these different people had by far the greatest influence in the formation of their various styles of architecture. The more closely we compare the temples of the pagan nations with their religious rites and mythologies, the more shall we be satisfied with the truth of this assertion."

The author next goes on to show the admirable adaptation of "those stupendous ecclesiastical edifices of the middle ages" to the purposes for which they were intended; concluding that it was "the faith, the zeal, and, above all, the unity of our ancestors, that enabled them to conceive and raise those wonderful fabrics." (p. 8.)

Chap. II. *On the State of Architecture in England immediately preceding the Change in Religion.* As evidence that architecture had attained a most extraordinary degree of excellence in this country at the time the state religion was changed [towards the end of Henry VIII.'s reign, or the year 1536], he adduces the chapels of King's College, Cambridge, certain collegiate buildings at Oxford, Bath Abbey, and many other well known ecclesiastical and monastic buildings still in existence, either entire, or partially so. He also mentions "the palaces of Richmond, Greenwich, Hampton Court, and Nonesuch, and the noble residences of Thornby Castle, East Barsham House, Oxburgh Hall, and Cowdry House," as being of this date. The whole proving that architecture was at that period in a high state of perfection, both as regards design and execution.

Chap. III. *Of the Pillage and Destruction of the Churches under Henry VIII.* This is an interesting chapter; but, as the subject must be familiar to most of our readers, we proceed to

Chap. IV. *On the Ravages and Destruction the Churches suffered under Edward VI., and after the final Establishment of the New Religion.* "Disastrous as the latter part of Henry's reign proved to religion and ecclesiastical architecture, the succeeding one of Edward VI. was doubly so." The church had then for its head a boy of nine years of age, who was used as a mere machine by those who constituted the government. These consisted of men who considered church property a legitimate source of plunder. Care was taken that the rites of the new religion should be simple and economical, so that all the images, chalices, &c., might become unnecessary, and the whole of the ceremonies might be "performed in a capacious barn," as well as in a church. Having given some striking facts on the subject of this chapter, the author thus concludes: —

"I have now, I trust, shown how intimately the fall of architectural art in this country is connected with the rise of the established religion. I first showed the stop it received under the destructions of the rapacious Henry, and consequent loss of those feelings by which it had been carried on so successfully for many centuries. I then exhibited how avarice and fanaticism, both produced by the growth of the new opinions, had plundered and destroyed all those splendid efforts of art, which, under the fostering care of the ancient faith, enriched and embellished every sacred pile. Further, I have shown to what base and sordid motives we are indebted for the preservation of what is now left; and, lastly, I have shown that, in order to render the churches at all available to the new system, they destroyed every grand feature about them, and rendered them both unsightly and inappropriate. There is one more result which I have not yet described, but it is one of the most dreadful, the most disastrous, and one which effectually prevents the possibility of achieving great ecclesiastical works: it is the entire loss of religious unity among the people. When the Common Prayer and Articles had been set forth, heavy fines were imposed, and even death was inflicted, on all who did not receive them as the only rule of faith or form of religious worship; and by such means as these men had been driven for a short time into an outward show of uniformity. But where was the inward unity of soul? where that faith that had anciently bound men together? Alas! that was utterly fled. Where were the spontaneous offerings, the heartfelt tribute, the liberal endowments, by which the ancient church had been supported, and the glorious works achieved? The scene was entirely changed; and not only had these feelings ceased, but the commonest and most necessary repairs of those very buildings, which had been raised in splendour by the voluntary offerings of the people, were only effected by rates, wrung by fear of law from the unwilling parishoners, two thirds of whom, from different motives, equally detested the form that had been forced upon them, and which they were compelled to support. No longer were village priests looked upon as pastors of the people, or those high in ecclesiastical authority with veneration and respect: the former were considered only as a sort of collectors, placed to receive dues they were compelled to pay; while the latter were eyed with jealousy by the avaricious nobles, and looked on by the majority of the people as a useless class of state officers. The increase of these feelings, within one century of its first establishment, caused the overthrow of the new religion, and the entire suspension of its functions, during the rule of the usurper Cromwell, a period of English history too well known to need dilating on; and the same feelings attended its revival with the restoration of the Stuarts, and do at this present day, with threatening aspect, menace its utter downfall."

Chap. v. *On the present degraded State of Ecclesiastical Buildings.* This is the longest chapter in the book, and also that which contains the most severe reflections on modern architects and architecture. The author begins by lamenting the decay of religious feeling, as compared with that which existed in Catholic times; and he gives, as a proof, the fact that the churches and cathedrals cannot now be left open at all times to "admit the devout," as they were before the Reformation. "What must be the moral and religious state of a country, where the churches are obliged to be fastened up, to prevent their being desecrated and destroyed by the people? How must the ancient devotion and piety have departed?" (p. 18.) After contrasting the clergyman of modern times with the zeal and devotion of the "ecclesiastic of ancient days," he asks, —

> "Can we hope for any good results while such men as these use, or rather possess, these glorious piles? Men who either leave the churches to perish through neglect, or, when they conceive they have a little taste, and do lay out some money, commit far greater havoc than even time itself, by the unfitness and absurdity of their alterations. Of this description were those made by Bishop Barrington at Salisbury, and conducted by James Wyatt, of execrable memory, which deserve the severest censure. During this improvement, as it was termed, the venerable bell-tower, a grand and imposing structure, which stood on the north-west side of the church, was demolished, and the bells and materials sold; the Hungerford and Beauchamp chapels were pulled down, and the tombs set up in the most mutilated manner between the pillars of the nave; and a host of other barbarities and alterations were made, too numerous to recite. Nor less detestable was the removal of the ancient tracery and glass from the great eastern and aile windows of St. George's Chapel, Windsor, and substituting copies of that tame and wooden painter, West; designs which would be a disgrace in any situation; and, when thus substituted for the masterly arrangement of the ancient architect, became even more detestable. In fine, wherever we go, we find that, whether the buildings have been treated with neglect, or attempted to be improved, both results are disastrous in the extreme. The fact cannot for one moment be denied, that these edifices are totally unsuited for the purpose of the present establishment, quite deficient in what is now so much studied — comfort; and, since the choir has been applied to the purpose of a parish church, totally wanting in actual sitting-room; to gain which, the ancient features are being rapidly swept away. What can be so disgusting as to enter the choir of a cathedral church, and find the stalls, nominally appropriated to the dignitaries of the church, occupied by all classes of lay persons; and not unfrequently the bishop's throne (the cathedra itself) tenanted, during the absence of the bishop, by some consequential dame? Nay, so entirely is propriety of arrangement or decorum lost in these churches, that, were it not for the presence of a few singing men and boys, and the head of a solitary residentiary peeping above his cushion, one would conclude the assembled group to be a congregation of independents, who had occupied the choir for a temporary preaching place; then the concluding rush out, when singing men, choristers, vicars, and people make a simultaneous movement to gain the choir door, produces a scene of the most disgraceful confusion. All this has arisen from the alteration of the ancient arrangement of appropriating the choir solely to ecclesiastics; but this was abandoned by the new churchmen, on the consideration that they could never muster a decent show, and so they let the people in to hide the deficiency of their absence. This led to pewing choirs, one of the vilest mutilations of effect the cathedrals have ever suffered: for what do all the

alterations that have lately been effected in Peterborough and Norwich Cathedrals tend, but utterly to destroy the appearance of a choir, filling up the centre with pews and seats, and contracting the grandeur of the open space into a paltry aile leading to boxes? It is in vain to cover the fronts of these seats with tracery and paneling: the principle of the thing is bad, and all that is done only renders the defect more glaring. This picture of the modern state of cathedrals is forcible, but is not overdrawn: any one may be satisfied of its truth by inspecting the edifices themselves, and the manner in which the services are conducted. Go to that wonderful church at Ely, and see the result of neglect: the water, pouring through unclosed apertures in the covering, conveying ruin into the heart of the fabric; the opening fissures of the great western tower, which, unheeded and unobserved, are rapidly extending. Then look at what was once the Ladye Chapel, but now filled with pews and vile sittings, brought from the parish church the chapter refused to repair; see how the matchless canopies have been pared down and whitewashed; look on the decay of the whole church, and then remember Ely is yet rich in its revenues. What must be the hearts of those men forming the chapter? And yet they are but a fair type of most of the others: I only cite them in particular, because Ely is one of the most interesting churches in existence, and it is decidedly in a vile state of repair. The same observations will apply to most of the other great churches. Why, Westminster Abbey itself, by far the finest edifice in the metropolis, if cleared of its incongruous and detestable monuments, is in a lamentable state of neglect, and is continually being disfigured by the erection of more vile masses of marble. Having occasion lately to examine the interior of this wonderful church, I was disgusted beyond measure at perceiving that the chapel of St. Paul had been half filled up with a huge figure of James Watt, sitting in an arm-chair, on an enormous square pedestal, with some tasteless ornaments, which, being totally unlike any Greek or Roman foliage, I suppose to have been intended by the sculptor to be Gothic. This is the production of no less a personage than Sir F. Chantrey. Surely this figure must have been originally intended for the centre of some great terrace-garden: it never could have been designed for the interior of the Abbey; for so offensive is it in its present position, that, if Sir Francis did really so design it, he deserves to be crushed under its great pedestal, to prevent him again committing so great an outrage on good taste. But is this noble edifice for ever to be blocked up and mutilated by the continual erection of these most inappropriate and tasteless monuments? Are the fees so tempting to the dean, or has he no better feeling? But what can we expect or hope from him or the chapter, when they suffer filthy dolls to be exhibited within the sacred walls, to render the show place more attractive to their shilling customers? Oh, spirits of the departed abbots, could you behold this! The mighty buildings you have raised, the tombs of the great men that lie within them — all is not attractive enough for the mob; a set of puppets are added: the show draws, and the chapter collects the cash. Oh, vile desecration! Yet this takes place in the largest church of the metropolis, the mausoleum of our kings; a place rendered of the highest interest by the art of its construction, and the historical recollections attached to it. Can we, then, wonder at what I have before asserted, and, I trust, have since proved, that cathedral churches are become but show places for the people, and considered only as resources of revenue by ecclesiastics? I am willing, however, to allow that there has been a vast improvement of late years, in the partial restorations which have been effected in certain cathedral and other churches, as regards the accuracy of moulding and detail. The mechanical part of Gothic architecture is pretty well understood; but it is the principles which influenced ancient compositions, and the soul which appears in all the former works, which is so lamentably deficient; nor, as I have before stated, can they be regained but by a restoration of the ancient feelings and sentiments. It is they alone that can restore Gothic architecture to its former glorious state: without it, all that is done will be a tame and heartless copy; true, as far as the mechanism of the style goes, but utterly wanting in that sentiment and feeling that distinguishes ancient design. It is for this reason that the modern alterations in the choirs of Peterborough and Norwich, above alluded to, have so bad an effect: the details individually are accurate and well worked; but the principle of the design is so contrary to the ancient arrangement, that I do not hesitate to say the effect is little short of detestable. The same thing may be remarked at Canterbury, where I am happy to make honourable mention of the restorations. A great deal of money has been expended, and, I may add, judiciously: indeed, the rebuilding of the north-western tower is an undertaking quite worthy of ancient and better days. In these works, as far as recutting mouldings, pateras, bosses, &c., and the repainting and gilding, nothing can be better executed; but, when we come to see the new altar screen, as it is termed, we are astonished that, amid so much art as this vast church contains, some better idea had not suggested itself. It is meagre and poor in the extreme, and not one particle of ancient sentiment about it; it is a bare succession of panels: but this is the result of modern feelings. When this church was used for the ancient worship, the high altar was the great point of attraction: it was for the sacrifice continually there offered the church itself was raised; neither gold, jewels, nor silver were spared in its decoration; on it the ancient artists, burning with zeal and devotion, expended their most glorious compositions and skill. The mass was gorgeous and imposing; each detail exquisite and appropriate. Such a design as this was not produced by multiplying a panel till it reached across the choir, nor was it composed to back a common table. No; the artist felt the glory of the work he was called on to compose: it was no less than erecting an altar for the performance of the most solemn rites of the church; and it was the glorious nature of the subject filled his mind with excellence, and produced the splendid result. From such feelings as these all the ancient compositions emanated; and I repeat, that without them Gothic architecture can never rise beyond the bare copy of the mechanical portions of the art. There is no sympathy between these vast edifices and the Protestant worship. So conscious of it were the first propagators of the new doctrines, that they aimed all their malice and invectives against them. The new religion may suit the conventicle and the meeting-house, but it has no part in the glories of ancient days: the Anglican church is the only one, among the many religions that sprang up, which retained the shadow of cathedral and episcopal establishments; and so badly put together was this jumble of ancient church government with modern opinions and temporal jurisdiction, that it has ever proved the subject of popular clamour, and, from present appearances, we may judge it will, ere long, be entirely changed. What a prospect to look to! What new ordeal, what new destruction are these ill-fated fabrics to undergo? The mind shudders at the thought. Are they to be walled up, as in Scotland, and be divided into the preaching-houses for the Dissenters, the Unitarians, and the Free-thinkers? Are they to be made into factories and storehouses, like the churches of France during the fatal revolution of 1790? Or are they, ruined and roofless, neglected to decay, like the many glorious fabrics that perished at the change of religion, of which only a few mouldering arches remain to indicate the site? One of these results must be produced whenever the present establishment ceases to exist. Let no one be deceived; such is the fate that awaits the cathedrals of this country. One ray of hope alone darts through the dismal prospect: it is that, ere the fatal hour arrives, so many may have returned into the bosom of the Catholic church, that hearts and hands may be found willing and able to protect these glorious piles from further profanation; and, in the zeal and spirit of former years, restore them to their original glory and worship."

The author next enlarges on the treatment which the ecclesiastical buildings with which cathedrals are surrounded have experienced. Bishops' palaces have either been pulled down, and rebuilt on a mean scale, or their grandest features left to decay. The residences of the vicars attached to cathedrals, as at Wells, have undergone a lamentable change, owing to the "blasting influence of the new religion."

After showing "how baneful and disastrous to art were the effects produced by the Protestants in those foreign countries where they were, at one time, partially established, the author concludes thus: —

> "Indeed, whether we regard the fanatic Knox in Scotland, the Huguenots of France, the compilers and concocters of the Anglican church, or the puritanic faction of Cromwell, we find that, divided as they were on points of their schismatical religions, they were united, heart and hand, in robbery and destruction. To them sanctity and art were alike indifferent: thirst of gold, and wanton love of destroying all which exceeded their narrow comprehensions, mingling with the most savage fanaticism, led them to commit crimes and disorders harrowing to the soul, both on the score of common humanity and the love of noble art."

The present system of church and chapel building the author characterises as

> "A system so vile, so mercenary, and so derogatory to the reverence and honour that should be paid to divine worship, that it is deserving of the severest censure; and I will say that, among the most grievous sins of the time, may be ranked those of trying for how small a sum religious edifices can be erected, and how great a per centage can be made for money advanced for the erection by the rental of pews. It is a trafficking in sacred things that vastly resembles that profanation of the temple which drew such indignation from our divine Redeemer, that, contrary to the mild forbearance he had ever before shown, he cast forth the polluters of the holy place with scourges and stripes. With respect to the style of that class of chapels built on speculation, it is below criticism. They are erected by men who ponder between a mortgage, a railroad, or a chapel, as the best investment of their money; and who, when they have resolved on relying on the persuasive eloquence of a cushion-thumping popular preacher, erect four walls, with apertures for windows, cram the same full of seats, which they readily let; and so greedy after pelf are these chapel-raisers, that they form dry and spacious vaults underneath, which are soon occupied, at a good rent, by some wine and brandy merchant. Of the horrible impiety of trading in religious edifices I have spoken more fully above; and I repeat, that no offence can sooner move the indignation of the Almighty, or provoke his vengeance, than such a prostitution of the name of religion to serve the private interests of individuals. In conclusion, although I would not for one instant deny that prayers offered from the humblest edifice that can be raised would prove as available and acceptable as if proceeding from the most sumptuous fabric, if the means of the people could produce no better; yet, when luxury is every where on the increase, and means and money more plentiful than ever, to see the paltry buildings erected every where for religious worship, and the neglected state of the ancient churches, it argues a total want of religious zeal, and a tepidity towards the glory of divine worship, as disgraceful to the nation, as it must be offensive to the Almighty."

Conclusion. *On the wretched State of Architecture in the present Day.* The author allows that considerable progress has been made in inventions "purely of a mechanical nature;" but that works of art, and productions of mental vigour, have declined in a far greater ratio than the others have advanced. He examines the pretensions of the present century to architectural skill by the results; that is, by the edifices produced.

"Let us look around, and see whether the architecture of this country is not entirely ruled by whim and caprice. Does locality, destination, or character of a building form the basis of a design? No; surely not. We have Swiss cottages in a flat country; Italian villas in the coldest situations; a Turkish kremlin for a royal residence; Greek temples in crowded lanes; Egyptian auction-rooms; and all kinds of absurdities and incongruities: and not only are separate edifices erected in these inappropriate and unsuitable styles, but we have only to look into those nests of monstrosities, the Regent's Park and Regent Street, where all kinds of styles are jumbled together to make up a mass. Of an equally abominable description are the masses of brick and composition which have been erected in what are termed watering-places, particularly at Brighton, the favoured residence of royalty, and the sojourn of all the titled triflers who wait upon the motions of the court. In this place, the vile taste of each villa and terrace is only surpassed by the royal palace itself, on which enormous sums have been lavished, amply sufficient to have produced a fabric worthy of a kingly residence. It would be an endless task to point out and describe all the miserable edifices that have been erected, within the last century, in every class of architecture; suffice it to observe, that it would be extremely difficult, if not impossible, to find one amongst the immense mass which could be handed down to succeeding ages as an honourable specimen of the architectural talent of their time. No one can look on Buckingham Palace, the National Gallery, Board of Trade, the new buildings at the British Museum, or any of the principal buildings lately erected, but must feel the very existence of such public monuments as a national disgrace. And, if we regard the new Castle at Windsor, although the gilding and the show may dazzle the vulgar and the ignorant, the man of refined taste and knowledge must be disgusted with the paucity of ideas and meagre taste which are shown in the decoration; and he will presently discover, that the elongated or extended quatrefoil and never-ending set of six pateras, in the rooms called Gothic, and the vile scrollwork, intended for the flowing style of Louis Quatorze, announce it as being the work of the plasterer and the putty-presser, instead of the sculptor and the artist. Nor is there to be found among the residences of the nobility, either in their town mansions or country seats, lately erected, any of those imposing and characteristic features, or rich and sumptuous ornaments, with which the residences of the Tudor period abounded. Nor can anything be more contemptible than the frittered appearance of the saloons and galleries, crowded with all sorts of paltry objects, arranged as if for sale in every corner, which have replaced the massive silver ornaments, splendid hangings, and furniture of the olden time. Indeed, I fear that the present general feeling for ancient styles is but the result of the fashion of the day, instead of being based on the solid foundation of real love and feeling for art itself; for, I feel confident, if this were not the case, purchasers could never be found for the host of rubbish annually imported and sold; nor could persons, really acquainted with the beauty of what they profess to admire, mutilate fine things, when they possess them, by altering their greatest beauties to suit their own caprice and purposes; a barbarity continually practised in what is called fitting up old carvings. All the mechanical contrivances and inventions of the day, such as plastering, composition, papier mâché, and a host of other deceptions, only serve to degrade design, by abolishing the variety of ornament and ideas, as well as the boldness of execution, so admirable and beautiful in ancient carved works. What can be so ludicrous as to see one of these putty-stamping manufacturers, with a whole host of pieces, cutting, paring, beading on, and contriving an ornament; then covering over the whole with priming, to hide the joints? And, when done, it is a heavy, disjointed, ugly composition. Yet it is cheap; that is, it is cheaper than what an artist can design and produce; and, without regard to its wretched inferiority, it is stuck up — where? in the royal palaces, and in the mansions of the nobles. And this introduction of pressed putty ornaments, which the commonest labourers can squeeze, is called a distinguishing mark of increasing taste, and encouragement for what is falsely termed splendid decoration; but which is, in reality, only a love of cheap, gaudy, and vulgar show. The just sense of all these various degradations into which architecture has fallen, together with the desire of representing the effect the pretended reformation had on the architecture of this country, induced me to undertake the publication of this volume. I own, the attempt is a bold one. Books have generally been written, and plates published, to suit private and party views and interests; in consequence of which, the truth has generally been wofully disguised, and flattery and falsehood have replaced sincerity and reality. In this work, I have been actuated by no other feeling but that of advancing the cause of truth over that of error. I feel acutely the fallen condition of the arts, when each new invention, each new proceeding, seems only to plunge them deeper in degradation. I wish to pluck from the age the mask of superior attainments so falsely assumed; and I am anxious to direct the attention of all back to the real merit of past and better days. It is among their remains that excellence is only to be found; and it is by studying the zeal, talents, and feelings of these wonderful but despised times that art can be restored, or excellence regained."

An *Appendix* of twelve pages consists of facts or observations in justification of the text.

The plates are very curious, and some of them illustrate most elaborate specimens from ancient edifices. The frontispiece, which is entitled "Selections from the Works of various celebrated British Architects," may be supposed to represent one end of an exhibition room or museum, in which certain churches, and other buildings, by Sir Robert Smirke; the church at Langham Place, by Nash; the Carlton Club, the Westminster Hospital, and the new National Gallery, Trafalgar Square; form conspicuous objects. The vignette title is a most elaborate design, in the manner of a monumental shrine, drawn and etched by the author. Plate 3. contrasts two altar-screens; that of Hereford Cathedral, in 1830, and that of Dyrham Abbey in 1430. Plate 4. contrasts parochial churches, and exhibits All Souls Church, Langham Place, side by side with St. Mary's Ratcliffe Church, Bristol. Independently of the difference in the architecture, the contrast between the persons seen in the street in front of the two churches is not less striking. Before Ratcliffe Church a number of decently dressed persons are kneeling or falling prostrate before a procession; before All Souls Church, a ragged fellow, sweeping a crossing, appears to be asking alms from a person who seems to threaten to apply his cane to his back. Plate 5. contrasts royal chapels; in which the Chapel Royal, Brighton, is contrasted with the Chapel Royal, Windsor. Plate 6. exhibits contrasted chapels; in which St. Pancras Chapel, London, and Bishop Skirlaw's Chapel, Yorkshire, are opposed. Plate 7. contrasts sepulchral monuments, in which that of the Earl of Malmsbury, in Salisbury Cathedral, put up by Chantrey in 1823, is compared with that of Admiral Jervyse Alard, in Winchelsea Church. Plate 8. exhibits King's Cross, Battle Bridge, as contrasted with Chichester Cross. Plate 9. contrasts college gateways; and the subjects are that of King's College, Strand, and that of Christ College, Oxford. Plate 10. contrasts town halls; and the subjects are Guildhall, London, and a foreign Hôtel deVille. Plate 11. contrasts public conduits; and the subjects are the pump at St. Ann's, Soho, and West Cheap Conduit, as it was in 1479. Plate 12. contrasts episcopal residences; in which Ely House, Dover Street, in 1836, is opposed to Ely Place, Holborn, in 1536. The contrast in the references to the elevations is as great as that of the architecture.

The references to the new house are, A A A, the nursery windows; B, an ill-shaped mitre; C C C, the drawingroom; D, the street door; E E, the parlour; F, the way down the area. This house has been built with due regard to the modern style of episcopal establishments. All useless buildings, such as chapel, hall, and library, have been omitted, and the whole is on a scale to combine economy with elegance!

The references to the old palace are, A, St. Ethelreda's Chapel; B, part of the library; C, the east cloister; D, lodgings for guests; E, the great hall. This venerable palace was sold to that eminent surveyor, C. Cole, who utterly destroyed it, and on its site erected the present handsome and uniform street, with its neat and appropriate iron gates, in 1776.

Plate 13. contrasts house fronts; in which that of Sir John Soane, and one in the Rue de l'Horloge, Rouen, are compared. Plate 14. contrasts inns; in which the Angel Inn at Grantham is opposed to the Angel Inn at Oxford. Plate 15., and last, is a vignette, representing the eye of Truth, attached to which is a balance, in one of the scales of which is a group of buildings, with a scroll, on which is inscribed the names of the architects; apparently J. Donithorne, D. Burton, G. Basevi, G. S. Repton, W. M. W. Innwood, W. Wilkins, James Wyatt, Robert Smirke, John Soane, John Nash, George Dance, &c. On the other scale is the elevation of the west end of a cathedral, with the name of William de Wykeham. This single edifice is represented as weighing down all the different buildings, by the architects named, on the scrolls attached to the opposite scale. The legend of this vignette is, "They are weighed in the balance, and found wanting."

As this work has been abused by some critics, and passed over unnoticed by others, we have thought it but justice to the author to endeavour to give a clear idea of it to our readers. Every one who has reflected on the subject will fully admit all that Mr. A. W. Pugin has stated relatively to the connexion between the Catholic religion and the architecture of our cathedrals, churches, and other ecclesiastical buildings; and that from the decay of devotion must necessarily result the decay of all architecture connected with religion. The day, in short, of religious enthusiasm is gone by, and with it every chance of the erection of such temples as have in all countries been erected where the power of the priests has been predominant. As the religion of every country becomes simplified, so will its temples. The same line of argument will apply to private dwellings. As the people of every country become enlightened, the aristocracy will cease to be able to quarter their offspring on the government, or on the church; and property, after a time, will become comparatively equalised. The splendour of a court will then be found unnecessary; and palaces and mansions, like those of the days of Henry VII. and Henry VIII., so much regretted by Mr. A. W. Pugin, will no more be erected than the ecclesiastical buildings of the same period. But, though gorgeous buildings will thus pass away, it will not follow that beautiful architecture will cease to exist; on the contrary, it will not be exhibited merely here and there, as in the former, and in a great measure in the present, times, but it will be universal in every dwelling-house, from the cottage upwards, in every street, and in all public buildings. We have no hesitation in stating it as our opinion, though we cannot now support that opinion by arguments in detail, that a higher degree of science and of taste may be displayed in a modern dwelling-house, taking the interior, as well as the exterior, into account, and including the furniture and the architecture, and also the mode of warming, ventilating, and lighting, than in any cathedral, Gothic or Grecian, that ever existed. No man, surely, will affirm that much mind is required to design either a Grecian temple or a Gothic cathedral, since they are mere repetitions of the same forms, differing only in magnitude and ornament. To estimate the rank of any artificial object in the scale of beauty, it appears to us that a safe criterion will be the degree of general science required in the producer. Now, though we admit that more science is requisite for the constructive part of a Gothic cathedral than that of a Grecian temple, yet we cannot agree that either of them requires the same extent of scientific knowledge as is absolutely essential to contrive all the different apartments requisite in the house of a gentleman of modern times, including the direction of all the different tradesmen whose workmanship is necessary to render it habitable. With respect to the modern buildings which Mr. A. W. Pugin contrasts with the ancient ones, we do not think the comparison instructive. It certainly shows that so much wealth is not now expended on buildings as formerly, nor so much exterior decoration; but that is no fault of the architects. That a number of architects, who have no natural genius for their art, have come into extensive employment, is to be attributed to two causes, both of which are rapidly dying away: the first is the practice of articling young men to eminent architects, without previously ascertaining whether they had any decided genius for architecture; and the second is the custom, till lately, of men of wealth employing, almost exclusively, the architects holding situations under government; a prudent mode of choice in a person who knows nothing of the subject. These two evils will be done away in the course of another generation, by all persons whatever being taught to draw as soon as they are taught to write, by which means their natural talent, if they have any, will develope itself, and none will be brought up artists or architects that nature has not formed for that kind of profession. By all being taught to draw, and by the museums of the fine arts which it is contemplated to establish every where, the taste of the whole public will be highly educated. The result of all this will be, that we shall have such architects as Barry, Salvin, and some others that might be named, and who, we have no hesitation in saying, are competent, not only to design anything equal to what has been executed by the ancients, but as far to surpass them as their means of intelligence are greater.

Art. III. *The Churches of London; a History and Description of the Ecclesiastical Edifices of the Metropolis.* By G. Godwin, Jun., Architect, Associate of the Institute of British Architects. Assisted by J. Britton, F. S. A., &c. 8vo, Nos. 1. and 2. Price 1*s.* each. London.

No prospectus being published along with this work, we are unable to say to what extent it is intended to reach. The two Numbers before us contain 38 pages of letterpress, four exquisitely engraved plates of St. Paul's Cathedral, a beautiful engraving on wood of the cathedral as it appeared before the fire in 1666, and others, equally beautiful, of the monuments to Lord Nelson, the Marquess Cornwallis, and Bishop Heber. The letterpress appears to be compiled with taste and judgment; combining historical relation with critical and professional remarks; and on the wrapper of each Number is given a glossary of the technical terms of architecture contained in it, for the sake of nonprofessional readers. This is exceedingly judicious, and, with a knowledge of churches, will diffuse a knowledge of architecture. The extreme cheapness of the work, and the superior manner in which it is got up, cannot fail to insure it a very extensive sale.

Art. IV. *Domestic Architecture in the Tudor Style, selected from Buildings erected after the Designs and under the Superintendence of P. F. Robinson, Architect, F.A.S., F.G.S., Vice-President of the Institute of British Architects, &c.* 4to. London.

In order to give an idea of what this work is intended to be, we give the following quotation from the author's address. The author, having stated that he has erected various houses in the Tudor style, says, —

"As my publisher assures me that a work illustrative of these may possibly succeed, I am induced to try the experiment. . . . . . In order to convey a general idea of the buildings I propose to illustrate, it is my intention, in addition to the plan, to give geometrical elevations, accompanied by scenic perspective views, with internal sections; and, as circumstances may require, plans and elevations of the lodges, or other detached buildings. I commence my series with some account of a house I have recently completed for John Henry Vivian, Esq., M.P. for Swansea." (P. ii.)

Mr. Vivian's house is illustrated by seventeen plates, neatly engraved in outline, with the exception of plates i. and viii., which are very handsome perspective views, displaying the house and the surrounding scenery to great advantage. The work, we think, is calculated to be very useful, both to young architects, and to gentlemen intending to build.

Art. V. *Literary Notices.*

Mr. Britton has published a *Catalogue Raisonné of a unique Collection of Books on Cathedral and Architectural Antiquities; with Proofs and Etchings: also Drawings, Manuscripts, &c., offered for sale at the low Prices affixed to each Article. To be seen at No. 17. Burton Street, London.*

This little tract is ornamented with some beautiful engravings on wood; and contains a list, not only of most of the numerous and laborious works of Mr. Britton, but of several other works illustrative of architecture, which are offered for sale by Mr. Britton at his own house.

Details of Ancient Timber Houses, selected from those existing at Rouen, Caen, Beauvais, Gisors, Abbeville, Strasburg, Nuremburg, &c., sketched on the spot, and etched by A. Welby Pugin, Esq., 22 plates, royal 4to, neatly bound in cloth, price one guinea, will be published forthwith.

Among the remains of ancient architecture still existing on the Continent, none are more deserving of attention than the extraordinary examples of timber houses erected during the fourteenth and fifteenth centuries, whose picturesque and elaborate façades form very prominent features in most of the Continental towns. It is well worthy of remark, that the designers of those times invariably suited the style of their compositions to the materials in which they were to be executed. Hence proceeds the wonderful spirit and character observable in those wooden edifices, where the necessary framing timber-ends, brest-summers, &c., are ingeniously converted into most elegant and ornamental features; and it is partly to illustrate this most important but almost unknown principle of ancient design that the present work has been undertaken. But, interesting as are the specimens given in it, under this consideration, there exists still another and yet more powerful reason to render them of the greatest interest to every admirer of ancient art. Not only has the natural decay of time and the rapid destruction of repeated conflagrations miserably reduced the number of these most curious buildings, but those which have been spared, and might yet long exist, are being rapidly swept away by the all-destructive influence of innovation: so fast, indeed, is this devastation going on, that of the twenty examples given in this work, seven were under actual demolition when sketched by the author. How important, then, to snatch from oblivion every memorial of these most interesting remains, so rapidly passing away; and Mr. Pugin intends devoting his immediate attention to a further illustration of this subject by giving a series of examples of internal fittings and decorations of the same period, and drawn from the same sources. — *London.* 96. *Strand, January* 12. 1837.

The Letters of Panopticus to the *Morning Post*, on the designs for the Houses of Parliament, illustrated by numerous engravings, in small 4to, price 2*s.* 6*d.*, is in the press.

Model Farm-Houses and Cottages for Ireland, and other improving countries; being a series of designs, with the necessary farm offices and gardens, &c., containing twenty plates of elevations and sections, including working plans of the various characteristic features, together with detailed estimates and letter-press descriptions, so as to afford the most perfect and ready facility to landed proprietors, and others, to erect any of these designs; by William Deane Butler, Architect, &c., 73. Stephen's Green South, Dublin; is in the press, and will be published by subscription, price 1*l.* 1*s.* Our notice respecting this k (which obtained for the author the first prize from the Royal Dublin Society, at their meeting, held on the 14th of April, 1836) ought to have appeared six months ago.

On historic mural Painting, and the Decoration of Temples, and other public and private Edifices, among the Greeks and Romans. This work, by M. Litronne, has been lately published in Paris;

and a copious abstract of it was read, April 14th, at a meeting of the Royal Society of Literature. (*Athenæum*, April 23.)

Ancient and modern domestic Architecture. Mr. Britton is preparing one or two lectures on "a comparative Review of ancient and modern domestic Architecture of England;" contrasting and exemplifying the general designs, forms, interior arrangements, fittings, and furniture of the houses of our ancestors, and those of the present age. The mansions of *Haddon Hall* and *Chatsworth* will form the basis of the parallels.

The Vicar's Close, Wells, in continuation of *Pugin's Examples of Gothic Architecture.* Mr. Walker has now in hand Part II., which will comprise a history and graphic illustrations from admeasurement of the *Manor House* and *Chapel* of *Great Chalfield*, Wilts, built in the reign of Henry VI., by one Thomas Tropenell, Esq.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Professional Precedents.* No. 2. *A Shire Hall and Courts of Justice.*

Suggestions to architects or builders who intend to offer plans and estimates for a Shire Hall and Courts of Justice for the county of Oxford.

The site chosen for the new building is freehold ground, belonging to the county, contiguous to the county gaol. It has been for many years occupied as a builder's yard, and still has one or more workshops erected upon it; but, stripped of these, and, if necessary, the entrance lodge of the prison being removed to another situation, the ground would present a clear frontage to the street of 140 ft. It thence extends, on the west side, in the direction of the gaol, to the boundary formed by a new building, which, it will be seen, is a recent adjunct to the gaol, 170 ft.; and on the east side, down to an opposite point on that side, the same number of feet. And, taking a line from east to west as the back frontage of the ground, a little above the new building which has been mentioned, the width of such frontage is 160 ft. This would leave a space of 80 ft. by 25 ft. running by the side of the new building, not taken into the account, but excluded from the square of the ground by the position of such building.

It is observable that, from the particular use the yard has undergone, various excavations have been made in it; and the firmness of the ground, with reference to a foundation, has been consequently interrupted.

It will not be attempted to furnish the enquirer with a minute description of the building desired by the magistrates, it being rather the province of the architect to lay before them such a design as his professional skill and experience determine to be appropriate; but this far it has been thought proper to direct the architect's operations, by informing him that the county wish to limit the whole cost of the building to about 6000*l.* That they desire to have erected, for this sum, a substantial edifice, with stone exterior, encumbered by no ornament, but, at the same time, bearing a handsome and characteristic appearance. Such edifice to include, as nearly as may be stated, a common hall, containing about 2000 superficial feet, or upwards, with two courts of justice (distinct from the common hall), one for the trial of prisoners, and the other for the hearing of civil causes. The criminal court to have a secret communication with the prison, so as to allow of the prisoners being brought from the prison to the bar of the court; and the same communication to be made in the other court, in the event of it being occasionally used as an additional criminal court. Each court to have a common area, with raised sittings, or not, as may be advised, for the public to witness the proceedings in the court itself. The courts severally to contain the best accommodation for the judges, bench, counsel, attorneys, and others concerned, and for the officers of the court; and facilities to be made for each class of attendants having free egress from the courts; and the counsel and attorneys a private passage from one court to the other.

In addition, then, to the common hall and the courts, the building must also contain a convenient grand jury room, with a private communication from it to the bench of the criminal court. A commodious waiting room for the witnesses of each court, with a private entrance from such room to its court. Rooms in which a hall-keeper could reside, and a room to be used by the clerk of the indictments at the assizes.

Further, there must be a returning room, for the judge of each court, and a consultation room attached to each court. Water-closets must, also, be affixed in different parts of the building.

And, lastly, offices for the clerk of the peace are to be erected within the building, to comprise a room for the principal, and rooms for his clerks; and to be fitted up with shelves for a small library, and compartments for the county records.

The plans of the several architects to be drawn upon a uniform scale of 8 ft. to 1 in., and to be finished either in outline or in Indian ink.

A general description will be required of the various apartments, both as to their construction and finishings. A detailed specification, and an estimate of the expense of executing the various works, so accurate as that the architect would be prepared to act upon it, if required, must accompany the plans; but such estimate need not be given fully in detail in the first instance.

The site may be inspected on enquiring at the lodge of the county gaol.

A premium of *50l.* will be paid to the person whose plans are adopted, in the event of his not being appointed architect of the works, but not otherwise; and no compensation will be awarded to any other person for his plans.

The plans, with specifications of, and estimates for, the required works, are to be transmitted to Mr. Davenport, clerk of the peace, Oxford, on or before the tenth day of March next. — *Oxford, January*, 1837.

[There is a lithograph plan of the site, which, we suppose, architects may obtain on application as above.]

ART. II. *General Notices.*

DINING-ROOMS. — I send you an extract from a periodical, entitled *The Original*, of which the late Mr. Walker, the magistrate, was the author.

The extract contains many hints, as to dining-rooms, well deserving the attention of architectural students, especially as they are applicable to rooms of the size usually found in houses occupied by the middle class of society.

Mr. Walker's object seems to have been to convince his readers that a greater degree of comfort can be obtained by a far more numerous class, and at a much more moderate expense, than is generally supposed. He contends that it is the useless, and, very often, tasteless, love of ornament and display (which rather detract from than increase comfort and enjoyment) that adds so much to the expense of domestic establishments.

These opinions so nearly coincide with those promulgated by yourself in the *Encyclopædia of Villa Architecture*, and in this Magazine, that I am induced to think you will deem the extract worth insertion in the latter publication.— *P. London, Oct.* 11. 1836.

Dining-rooms, in London, are in general, I think, very tasteless and uninspiring in themselves; and, when set out, they are decorated, after the barbarian style, rather for display than with reference to their use.

From the architect to the table decorator there seems to be a total absence of genius for the real objects to be aimed at. Justness of proportion, harmony of colouring, and disposition of light, are the most desirable qualities in any room, but especially in a dining-room; without any individual ornaments, or objects to distract the attention, so that, the moment one enters, there may be a feeling of fitness which is productive of undisturbed satisfaction, and disposes the mind to the best state for enjoyment. Attention should be directed to produce an effect from the whole, and not by the parts. For this reason, light should be thrown in the least observable manner, and not ostentatiously, from ornamented objects. There should be the pleasing effect of good light, with the least perception whence it comes. There is no art in lighting a table by cumbrous branches, but there is in throwing a light upon it, like some of Rembrandt's paintings, and the effect is accordingly. The first is vulgar, the latter refined. In the same manner, light from windows should be admitted only with reference to the table; and during dinner the view should be shut out, to prevent distraction. With respect to the proportions of a room, they should be studied with reference to the table, which, as I have said, should, in my opinion, be of the size to accommodate not more than eight persons. In point of width, I would not have more space than necessary for the convenient circulation of the least possible number of attendants. In point of length, there should be room for a sideboard at one end, and a sufficient space from the fireplace at the other; so that the length of the room would be somewhat greater than the width. In respect to height, it should be proportioned to the length and width; and, therefore, the height would not be considerable. A high room is certainly not favourable to conversation, because it is contrary to the principle of concentration; and the prejudice in favour of height arises from its effect considered with respect to large parties, and to overloaded tables. I would have the door in the side, at the end near the sideboard; and the windows on the side opposite. As to colouring, the same rule ought to be observed as in every thing else; that is, to study general effect. To suit all seasons best, I think the walls ought to be of rather a sober colour, with drapery of a warm appearance for cold weather, and the contrary for hot. Perhaps it may be thought by many that all these particulars are very immaterial, and that the consideration of them is very trifling; but my opinion is, that, in all our actions, whether with reference to business or pleasure, it is a main point, in the first place, to produce a suitable disposition; and, as dining is an occurrence of every day of our lives, or nearly so, and as our health and spirits depend, in a great measure, upon our vivid enjoyment of this our chief meal, it seems to me a more worthy object of study than those unreal occupations about which so many busy themselves in vain. But I am forgetting an important matter in the dining-room: I mean, the due regulation of the temperature, upon which comfort so much depends, and from want of attention to which there is annually so much suffering, both from heat and cold. In hot weather, the difficulty is the greatest, and is best to be overcome by attention to ventilation and blinds. In winter, there is little difficulty, with due care, and no stinginess; which latter is apt to appear, both in having the fire only lighted just before dinner, and in not keeping it up properly to the end of the party. And I do here protest against the practice, I have often witnessed, of letting the fire actually go out, in cold weather, before the guests: there is nothing more cheerless, or of more inhospitable appearance. On the other hand, a bright blazing fire has a very inspiring effect on entering the dining-room, and is an object worthy of special attention to those who wish their parties to succeed. Moreover, in such a room as I have described, the opening, after dinner, on a dreary day, to admit a cheerful fire, would be a very inspiring moment, with an agreeable party, brought into perfect unison by a well-imagined, well-executed repast: a scene to kindle, equally, attachment to one's friends, and love of one's country. The cultivation of the fire-side is one of the greatest import, public and private.

Having said, I think, every thing I have to say as to the arrangement of the dining-room, I will here dedicate a word or two to its necessary appendage, the kitchen, which I would have literally an appendage; and not, as at present, a distant and unconnected establishment. As I said before, I am now supposing the whole object to be the perfection of dinner parties, without reference to any other consideration; and, therefore, I put aside custom, fashion, and prejudice, as enemies to the true theory and practice; and I boldly advance my own opinions. I must beg the reader to bear in mind that I am speaking with reference to small parties, and that I am an advocate for dinners which, as nearly as can be calculated, are just enough, and no more. I speak not of the bustle of preparation for twelve, sixteen, or twenty people, with about four times as much as they can possibly consume, and with a combination of overpowering heat and disagreeable scents. I have in view a quiet little kitchen, without noise, or annoying heat, or odour, save some simple savoury one, provocative of the appetite, and incapable of offending the most fastidious. Such an establishment would I have immediately adjoining my dining-room, and communicating with it by an entrance close to the sideboard, closed, during the process of dinner, by a curtain only, so that the dishes could be brought in without noise, or current of air, or constant opening or shutting of a door. (*The Original*, No. 17.)

ART. III. *Foreign Notices.*

FRANCE.

THE Obelisk in the Place Louis XV. — The first movement of this obelisk raised it, in five minutes, to about 20 in. *Galignani's Messenger.* (*Morn. Chron.*, Oct. 27.)

A new Hydraulic Machine for raising Water from the Seine, for the supply of Paris, instead of the old machine at the bridge of Notre Dame, is now in the course of erection, under the eminent engineers MM. Arrago and Poncelet. The water will first be raised to a cistern in the Tower of St. Jacques, from which it will be distributed over the whole of the Fauxbourg St. Germain; not only to every house, but to every floor or story of that house. (*Hermès*, Nov. 23. 1836.)

Lebas's Model Prison. — A ground plan of a prison and female penitentiary, of which the architect is L. H. Lebas, has recently been published. The main body of the building is a hexagon, in the centre of which is a circular building, which contains the kitchen and the private cells, and which communicates by six passages, used as dining-rooms, and two of them containing staircases, with the different sides of the hexagon. Two squares, exterior to the hexagon, and at opposite sides, contain, the one, the residence of the Governor and the different officers of the establishment; and the other, the infirmary. The whole is surrounded by a terrace, on which several guards perambulate night and day. The engraving, which is in one large sheet, is well worth procuring by every architect. Where it is sold in Paris is not mentioned; but we should suppose it might be obtained through Mr. Weale. — *Cond.*

The Church of Madonna of Loretto. — This very handsome church, designed by Lebas, was completed in August, 1823. We have recently seen an engraving of it, which we would also recommend architects to procure from Paris. — *Id.*

GERMANY.

Competition Designs wanted for building an Exchange in Hamburg.—The Secretary of the Institute of British Architects has received from one of the honorary and corresponding members of that body notice that, by a resolution of the Senate and burghers of the city of Hamburg, dated the 27th of October, 1836, it was determined to take measures for building an Exchange, on a site comprising the present Adolphus Square, and that now occupied by the Magdalen Convent and the adjoining buildings. The undersigned authorities of this city therefore invite native as well as foreign architects to prepare plans and estimates for the same, under the following conditions: —

The building must be free and detached on all sides, and surrounded by streets of a suitable width. A surface of 25,000 square feet is to be appropriated for the business of the Exchange; and attention should be paid to the best mode of heating the same, so that, if this should be afterwards determined upon, it may be done in the most effectual manner. Adjoining to this space, and in connexion with it, there must be twenty counting-houses or offices for ship-brokers and salesmen, each containing not less than 200 square feet, besides a few rooms for general business. In the upper story, there will be required, for the accommodation of the Board of Trade, besides a library, capable of containing about 25,000 volumes, and a meeting-room of about 3000 square feet, seven rooms, containing together about 4500 square feet: in addition to these, there must be ten more comptoirs, of the same size as above; and, if the space will admit of it, a few rooms for insurance business.

The competing plans must be delivered in, sealed and free of postage, before May 1. 1837.

The plan which, according to the judgment of the competent authorities, shall be found to be the best, and the most applicable in conformity to the conditions, shall receive a premium of 100 louis d'or; and the second, one of 100 Dutch ducats.

The two plans shall remain the property of the state; and the competent authorities reserve to themselves the right of making use of them in the building, either *entirely*, *in part*, or *not at all*. The others will be returned on delivery of the receipts. Should no one of the works sent in be reckoned deserving of the first or second prize, then the undersigned authorities reserve to themselves the right, of either renewing the competition, or of giving it up altogether.

The conditions under which the above designs are to be admitted to the decision of the Senate and burghers of Hamburg have given rise to the following spirited protest: —

The peculiar character of the science of architecture, viz. that it cannot be reduced to practice without the intervention of mechanical labour, may give rise to the notion, that architectural works are themselves, in fact, the produce of that labour; because the mechanic, in a spirit of imitation, frequently endeavours to make use of the results of the art: whereas, this labour of the mechanic, or the operative, in fact, only lends its helping hand to carry into effect the idea of the architect.

This error is less hurtful in its consequences when the building of private houses only is concerned; but it is fatal in the construction of large public buildings; as these ought to be real works of art, and monuments of the spirit of the age.

When site, size, and spacious distribution are proposed for such a building, it becomes the business of the architect to produce a work of art corresponding to the demand. Such a work will assume a different character according to the individual energies and character of each artist; but can only be considered in the light of an harmonious and, as it were, organic, whole; which, when taken to pieces, and arbitrarily recomposed, with an admixture of foreign matter, must be destroyed, and entirely lose its character.

Moreover, that an architect should not himself superintend the building which he has projected, can only be viewed as a wretched alternative. No one individual can enter into the real spirit of another; and it cannot be doubted that this spirit will show itself in the execution of the details.

As, therefore, in the invitation to competitors to deliver in plans, it is stated of those that are to receive the prizes, that "the competent authorities reserve to themselves the right of making use of them in the building, either *entirely*, *in part*, or *not at all*," the undersigned architects (without referring in any manner to the *first* or to the *third* of these reserved alternatives) feel so strongly that the *partial* use of these designs would be so directly at variance with the very first requisites of every genuine work of art, namely, its unity, that they owe it to the dignity of the art they profess, to their fellow-citizens, and to foreign countries, to announce the impossibility of their complying with the requisition *in its present shape*, although they would have considered themselves honoured in responding to it under suitable conditions.

(*Signed*) E. Averdieck,
H. W. Burmeister, and twelve others.

The plan of the site for the proposed buildings, and other particulars, may be seen, on application, at the rooms of the Institute of British Architects, 43. King Street, Covent Garden, London, daily, between 12 and 5 o'clock. — (*Communicated by M. J. B. A., Feb.* 20. 1837.)

Art. IV. *Domestic Notices.*

ENGLAND.

New Houses of Parliament.— It is stated in the newspapers that Mr. Barry has presented a detailed estimate, the amount of which is less than his rough general estimate by 724,986*l.* The plans, &c., are referred to competent authorities for examination. (*Lit. Gaz.*, Feb. 4.)

Street Houses. — The Old English style of architecture is, in my opinion, so well suited to houses in our streets, that I should like to see a line of houses built in that character. Of a specimen of this style of building in streets we have but few examples. In Newgate Street, facing Warwick Lane, we have an application of it; but this is hardly a fair example, as it owes part of it effect to its irregularity and want of uniformity with the other houses in the street. — *F. Lush, Feb.* 1837.

Berkshire. *Exhibition of the Hospital Plans.* — Although we have not the most distant idea of cavilling at the decision of the Committee appointed to investigate the several plans for the County Hospital, which have been submitted to their inspection (because we have always made a practice of giving credit to such committees for honesty of purpose, and some taste for the art, upon the merits or demerits of which they have undertaken to decide), still we think that we may be excused, if we indulge in a spirit of fair and open criticism upon the present occasion. It appears that the Committee, not being perfectly satisfied with their own opinions upon this important subject, and wishing to avoid any responsibility that might attach to an error of judgment in the choice, determined upon the very wise course of calling in an experienced architect to assist them in their onerous duties. With this view, Mr. Basevi, a gentleman of some eminence in London, was requested to afford his services. Now, why Mr. Basevi, of all others, was pitched upon for this high office, we never could make out. We have never heard him mentioned as possessing any remarkably pure or classical taste for the science he practises. We do not wish to deprive him of his well-earned fame; as we have understood that the structural arrangement of his interiors compensates for the want of architectural uniformity of the elevation, occasionally evinced in the public and private works which he has designed and executed. But be this as it may, this gentleman was selected for the enviable post. On these occasions, however, we think it highly improper that the decision should rest upon the opinion of a single person, however eminent he may be; as it is but natural to suppose that such a person would be partial to the choice of such designs as were most in accordance with his own taste and feelings. Now, it is well known that Mr. Basevi possesses, and occasionally exercises, a singular taste in architecture; a taste compounded of the different styles and orders, now and then discovering bold invention and ingenious design, as was observed in the works of Mr. Nash. Considering these peculiarities, we are not at all surprised at the decision which has been made The successful competitors have, one and all, discovered the same peculiarity of taste; and we shall now proceed to analyse their respective works, previous to making some general observations upon the productions of the candidates in general. We shall adopt this plan, and proceed in the order of the numbers. We regret that the committee have not come forward to assist in getting up this most interesting exhibition: we think it ought to have been under their superintendence, and to have taken place at a somewhat earlier period. We regret, also, the exclusion of the medical gentlemen attached to the Dispensary from the Committee; the persons, of all others, the best calculated to decide upon the accommodations which would be required: this, to say the least of it, was a great oversight. In the stipulations of the Committee, it was premised, 1st, that the drawings should be in sepia; 2dly, that an estimate should accompany the plans; that great attention should be paid in the construction of the bath rooms; and that accommodation should be afforded for sixty patients. We will now see how far the successful candidates have complied with these conditions. We contend, at starting, that the second and third plans ought to have been set aside at the commencement of the examination, as we are prepared to show that they were not even eligible for exhibition.

First premium, Mr. H. Briant. A Gothic building, in good taste, with the exception of a square turret at the top, which gives it an overloaded appearance, and detracts from its general beauty. We cannot imagine that this could ever have been executed for the estimated sum, 6000*l*. The internal arrangements, adapted to an Ionic elevation, which is, we understand, undergoing some trifling alterations, are superior, and reflect great credit upon the artist, who has evinced considerable judgment in the disposition of the wards and offices. We are quite satisfied with the decision of the Committee in this case.

Second premium, Mr. Newham. A heavy uninteresting mass of building; an ill-looking compound of the Elizabethan and Italian styles, capable of containing only forty-eight *beds*. *No estimate accompanies this design*, and we cannot say how much would be required to build it, from there being only two plans, and no sections. The principal staircase is narrow and awkward, being only 4 ft. 3 in. in width. The windows and roof, contrary to the rules laid down by the Committee, are *painted in neutral tint*. There are no rooms for the surgeon or surgeon's examining room. The bath room, to which attention was so expressly directed, is only 7 ft. long by 3 ft. wide. There is neither a sitting nor a bed-room for a single pupil. The committee room, intended to be also used as a physician's consulting room, is only 15 ft. by 12 ft. We really cannot conceive how the Committee could allow this plan to be marked out for the premium: it is awkward, imperfect, and contrary to their stipulations.

Third premium, Mr. Inman. If this plan had been intended for a prison or lunatic asylum, we should say that the artist had succeeded admirably in the design. The windows of the wards are 8 ft. above the floor, precluding the possibility of the unfortunate inmates ever getting a glimpse of the beautiful country which surrounds the site of the intended erection. The entrance to the principal ward is a perfect optical illusion, and seems to have puzzled Mr. Basevi to make it out. There is only one nurse's room to each side of the building, and that very inconveniently situated, the nurse having to ascend and descend a flight of steps in order to get into the ward. The principal floor of the building is 8 ft. above the level of the ground; and it is raised upon a very inconvenient and expensive artificial mound. There is no estimate attached to this design; and we cannot observe any capability for its being enlarged on any future occasion. The elevation is heavy, and unlike anything we have ever seen: it does not possess many features of architectural beauty; and the internal arrangements are not very good.

No. 4., Wyatt. The production of a young and promising artist. We congratulate him upon this his maiden effort, and wish him success in the path he appears to have adopted. The designs, although not entirely free from faults and incongruities, are creditable to him, as a tyro in the art.

No. 5., Clacy. A compact building in a peculiar style, with a portico of the Ionic order. The elevation is somewhat injured by the introduction of a cupola at the top. There is an originality, however, in the designing which we do not generally observe in the plans before us. The arrangement of the interior, and its general fitness to the end proposed (the grand object of architectural science) are very well displayed. We should say, from the inspection of these plans, that a little farther study of the external appearances of some of our public buildings would be of service to him. He has evidently a good taste in construction and arrangement.

No. 6., Billing. An elevation of the Ionic order, presenting a somewhat bold and handsome aspect. We augur well for this young gentleman. But we should recommend to him the study of the classic models of antiquity, and more especially the proportions of the columns of the orders. In this plan they are too narrow and too high. The offices are generally very well arranged; and the ventilation of the building is excellent. We should call this a good practicable plan.

No. 7., Brown. A beautiful elevation, of some originality. The portico is supported by columns of the Ionic order. We should say that the architect would be more at home in domestic architecture, in the building of a princely mansion, than in the building of a hospital. The conception of the perspective plan is vigorous, and does him credit for purity of invention. The interior is well arranged, with the exception of an awkward appendage protruding from the back part of the building, which might with propriety have been dispensed with.

No. 8., Fulkes. There are two elevations appended to these plans. They are both of them chaste and classical. The disposition of an elegant Doric frieze and cornice gives great beauty to the *tout ensemble*. They are very pure specimens of the Grecian Doric. The internal arrangements are altogether good, although we do not exactly approve of the plan of dividing a building of this kind into large wards only: a few moderate-sized wards are useful. The manner of managing the ventilation through tubes constructed in the walls is novel, and the ventilation generally has received considerable attention. We should say that these plans were the production of a good practical architect.

No. 9., J. J. Cooper. A building in very good taste, and evincing science in the art; and the interior arrangements are very good. The architect has not exactly adhered to the stipulations of the Committee. The designs are coloured.

We shall here conclude our critical analysis of the works of the architects residing in the town. We have taken the liberty of remarking upon their respective merits and demerits, without any partiality. We are delighted to have this opportunity of giving our opinion upon their several productions, and will conclude by expressing our pleasure at the general talent displayed by architects residing in the town. We may say, with great truth, that they need not fear the competition of their metropolitan brethren. — *From a Correspondent.* (*Berkshire Chronicle*, Feb. 11.)

SCOTLAND.

The Committee of Subscribers to Sir Walter Scott's Monument at Edinburgh have for years been trifling with the matter. At first, they had designs from a limited number of artists; and Rickman, Roberts, and one or two others, were directed to submit drawings of a Gothic cross. Neither of them pleased these critics; and Playfair was instructed to prepare an obelisk; but that would not do. Then came a simple statue; but, dissatisfied with the designs submitted to them for that idea, after years of deliberation, the whole affair was thrown open to general competition, and a decision come to; still, however, not a final one. To Rickman, who had a claim against them for his former design, a premium has been adjudged; another has been awarded to a carpenter, who was well known for some clever drawings of Melrose Abbey; and a third has been gained by Fowler, the architect, and Sievier, the sculptor, who sent in a joint design: but neither of the plans, it is said, will be adopted. Long ago, it was reported as probable that a young sculptor, of the name of Steele, would be likely to succeed; but he has not got a premium. It is said that, at the last meeting of the Committee, a friend of Playfair, the architect, stated that he had some design in embryo; and that, if they would wait till it was completed, he would favour them with a sight of it; and, as he made such a *handsome* offer, it was resolved to suspend further proceedings. This is too trifling and ridiculous. The Committee, had they at first adopted an open straightforward course, and offered the subject for fair competition, with the promise of an unbiassed and competent tribunal to decide their choice, would have had every artist of reputation enter the lists, and, by this time, would have had a monument worthy the occasion, to point at as evidence of their attachment to their highly gifted countryman: as it is, they will outlive the interest attached to the circumstance, and a sacrifice will be made, as usual, on the shrine of interest, favour, trickery, and humbug. — *E. F. Edinburgh, January* 30. 1837.

ART. V. *Retrospective Criticism.*

TRANSACTIONS of the Institution of Civil Engineers. (p. 42.)—As a whole, the *Transactions of the Institution of Civil Engineers* is a magnificent work, and such as could only be produced from that particular institution. The articles are extremely well selected, every one tending to advance the student beyond what has been before published; which is a great blessing to a reader now-a-days. You have already published my ideas as to Chester Bridge; and I think, with you, that the panels are paltry. Perhaps the time will arrive when the external spandrils will be filled with sculpture, like a frieze, or tympanum of a pediment, if the bridge has a Grecian character. The centre was an admirable contrivance, containing more merit than all the rest. The lead would not have been used by Rennie. From what is said respecting the Dora Bridge (where large stones were used), I can see no limit to the extension of spans beyond 200 ft. (except the size of the stones). The Lary Bridge is an instance of great beauty and cheapness. After all, the steam ferry-boat will prove the bane to all extravagant projects for bridges in future; such as Runcorn, and others.

To the *Transactions of the Institute of British Architects* (p. 33.) I am ready to give praise. The articles on concrete are invaluable. Fowler's roofs are very ingenious; but, compared with engineering works of the kind, they are very narrow. Smith's bridges are good; but the system is limited to very hard stone. Brunel should have used the strongest hoop-iron below, where the greatest strain was. — *W. T. Norwich, Jan.* 15. 1837.

ART. VI. *Queries and Answers.*

DR. ARNOTT's Stove is said to save "seven eighths of the fuel heretofore consumed, to keep the room always at the temperature required, without risk of the fire going out; and only to require to be attended to once in twenty-four hours. The coals, once placed in the stove, require no more looking after than does the oil poured into a lamp. For comfort, safety, and economy, this discovery must rank high in public estimation." (*Druid's Magazine.*) [We should be glad to have some account of this stove from any of our correspondents who have seen it in use.]

ART. VII. *Institute of British Architects.*

JANUARY 16. 1837.—P. F. Robinson, V. P., in the chair.

Elected. The Right Hon. Lord Viscount Kingsborough, Dublin; W. R. Hamilton, Esq., Stanley Grove, Chelsea; and J. B. Greenough, Esq., Regent's Park; as Honorary Members.

Presented. Transactions of the Institution of Civil Engineers, vol. 1. 4to. Transactions of the Royal Society of Literature, 4 vols. 4to. Journal of the Royal Geological Society, 9 vols. 8vo. Selections from the Museum of the Vatican, 1 vol. folio. The second Letter of W. R. Hamilton, Esq., to the Earl of Elgin, on the new Houses of Parliament. Père Laugier's Essay on Architecture, 1 vol. 8vo. Specimens of Stone from Leicestershire. 10*l.* for general purposes, by W. Hurst, Fellow, of Doncaster; and Specimens of Stone from Yorkshire.

Read. A letter from W. S. Inman, Esq., containing a donation of 8*l.* 2*s.* 6*d.* to the fund for providing a Charter to the Institute. A Paper by G. Godwin, jun., on the Means recently employed at Paris for erecting the Obelisk of Luxor; with some Remarks on the Form, Object, and Decoration of Obelisks in general; illustrated by drawings and models. A Paper by T. L. Donaldson, Hon. Sec., respecting the Edifices at Paris completed in the year 1836, and also those now in progress; communicated by M. Guenepin, Hon. and Corr. Member. A Paper descriptive of Ward's Patent Self-regulating Ventilator.

February 6. 1837.—Earl de Grey, President, in the chair. The balance in the treasurer's hands appeared to be 157*l.*

Elected. J. D. Morgan, Architect, as Associate.

The Charter. The President then addressed the Meeting, and presented the Charter; after which the following address of the Council was read:—

Gentlemen, it is with no ordinary feelings of satisfaction that the President and Council congratulate the members of the Institute upon the successful realisation of those hopes which have been cherished from the very first formation of this Society. His Majesty's gracious compliance with the petition of the president is a proud circumstance in the annals of the profession, which now has the gratification of being represented by a body duly constituted, sanctioned, and incorporated under the highest auspices, and, consequently, placed under the protection of the laws of the realm. This event, which it has been the earnest, though hitherto fruitless, desire of our predecessors to accomplish, has at length been fulfilled; and, recognised as this body has been by the first great source of authority and power, it is hoped that the future existence of this Institute will meet with no other rivalry than that of a generous contest to effect the utmost good; and that it may pursue its course of usefulness by cultivating its many branches of science, and diffusing the knowledge of the principles of Architecture through every clime and among every class, with credit to its members, and with advantage to the noble art which they have the honour to profess. In looking back upon the rapid advance into notice and distinction which has been made by this Institute, the Council cannot but reflect upon the essential assistance which it has derived from the great body of the profession, and from the liberality of its Honorary Fellows. The public generally, and the kindred societies at home and abroad, have generously responded to the invitation made to them. Numerous scientific bodies, as you are aware, and even as the proceedings of this evening will show, have placed themselves in correspondence with us. If, then, we have succeeded thus far, and the recent Charter which we have obtained affords matter for so much satisfaction, still we must at the same time remember, that we shall have the attention of the scientific world now more immediately fixed upon our future proceedings. The Council, therefore, cannot but feel deeply impressed with the accumulated responsibility also arising from these very circumstances. They would wish to urge upon your conviction the obligation, which rests upon every individual member, to use great exertion, to make every effort, and to call into action his utmost ability and inclination to assist in maintaining that distinguished position which we have gained; thus proving ourselves worthy the privileges with which His Majesty has given us permanence and stability, upholding the character of the profession, and showing that we may, without presumption, claim to be recognised as worthy followers of the important art and science which we cultivate. To retain, then, the rank which the Institute of British Architects now holds among the chartered scientific bodies of Europe, the President and Council rely with confidence upon the individual exertions and personal cooperation of each member. Those, who have not hitherto taken any active part in the proceedings at our meetings, are earnestly invited to forward some communication, however brief, upon points of theory or practice which must have fallen under their notice. Thus will they best show that in the exercise of their talent they are not stimulated by a mere selfish sentiment of personal aggrandisement or the cravings of an ambition for distinction centering only in themselves; but that they are actuated by the loftier motive of a more generous zeal for the promotion of Architecture, and by a cordial interest in the prosperity of an institution, which has been for so many years the great object of ambition to Architects, and with which the character of the profession is now irrevocably interwoven.

The Charter is not the ultimate point of our hopes; it is but the threshold of an enlarged field of action: it should serve as a stimulus to our continued progress onwards, and to a gradual increase of attainments and knowledge, until the science which directs us shall be as well defined, and as accurately laid down, as astronomy now is, by which the mechanism of unnumbered worlds has been brought within the grasp of the human understanding; and until the region of taste, the music of the eye as it has been aptly termed by Aristotle, shall have been thoroughly investigated, its effects resolved to their first principles, and its laws be as well understood, and as universally recognised, as the exquisite beauties which, in literature, distinguish the productions of a Homer, a Dante, and a Shakspeare.

The President and Council, in thus bringing to so happy a conclusion this important matter, assure the members that, as long as they are pleased to place confidence in their exertions, nor effort, nor time, nor zeal shall be wanting on their part to fulfil the duties which devolve upon them, in contributing to work out the great purposes of the Institute of British Architects.

[We shall take an early opportunity of laying a copy of the charter before our readers.]

An extract from the minutes of Council, held Jan. 16., was read, as follows:—"The committee, to whom was referred, by minute of last meeting, the Essay sent in for the prize medal, being doubtful as to its being worthy the prize, and the Essay having been forwarded to the other members of the Council for consideration: Resolved, That the Council are of opinion that there is much merit in the composition of the Essay, but that it is not a paper of sufficient importance to deserve the distinction of the medal.

Presented. Lithographs of the Cartoons of Raphael at Hampton Court; and Results of the Parliamentary Enquiry relative to Arts and Manufactures. Transactions of the Society of Arts, vol. li. Part. 1.: 8vo. Three Views of the projected Improvements at Westminster. The Churches of London, Nos. 1. and 2. Essay on the Application of Monastic or Christian Architecture to modern Mansions; by J. Britton, Hon. Mem. A Volume of MS. Records, from J. Goldicutt, Fellow, relating to the Soane Medal and Festival.

Read. A Letter from W. R. Hamilton, Esq., acknowledging his election as Hon. Mem., and containing a check for 30 guineas, in consequence of which his name was transferred to the list of Honorary Fellows. A Letter from the President of St. Luke's Academy, Rome, stating they had received a Soane Medal, and presenting in return a medal struck in honour of the celebrated Canova, with a copy of their laws, and some works on art recently published by the Academy. A Letter from the Rev. R. H. Froude, Darlington Parsonage, containing a check for 10*l*. A Letter from J. W. Whitwell, Esq., of Highgate, stating that an Architectural Society had been recently established at Berlin, under the auspices of some distinguished patrons of architecture; and presenting a copy of Nos. 1. and 2. of Architectural Designs, and Nos. 1. to 6. of the Journal of Association, published by that Society. A Letter from T. Rickman, Esq., Architect, of Birmingham, requesting information as to the results arising from the use of Kyan's Patent Preparation of Timber. Dr. Faraday, being present, answered the queries; and gave it as his unprejudiced opinion, that Kyan's process was most efficacious in every respect. A Memoir of the late Sir John Soane was read by T. L. Donaldson, Hon. Sec.

February 13.—J. B. Papworth, V. P., in the chair.

Elected. W. F. Pocock, Architect, of Knightsbridge, as Fellow. W. W. Pocock, Architect, of Knightsbridge, as Associate.

Presented. Transactions of the Royal Society for 1836. Transactions of the Royal Society of Edinburgh, vol. xiii. Specimens of Woods and Timbers used in Construction, from W. White, Esq. Pinckerton on Rocks, 2 vols. 8vo.; from Mr. Dipple of Richmond. Specimens of Stones in Wales, and in Deane Forest, from J. Jenkins, Esq.

Read. A Letter from Lord Kingsborough, acknowledging his election as Hon. Mem., and stating that he hoped ere long to present a copy of his Work on the Antiquities of Mexico. A Memoir of John Carter, author of various works on Gothic Architecture; with a Review of his Character, and Notice of his various Productions; by J. Britton, Esq., Hon. Mem.

T. L. Donaldson, Hon. Sec., drew the attention of the meeting to a fragment of marble, being part of a tablet which was over the centre doorway of Bloomsbury Church, under the portico; and which had recently fallen down, the marble having been completely disintegrated by the action of the atmosphere.

ART. VIII. *Obituary.*

DIED, Jan. 20., at his house in Lincoln's Inn Fields, *Sir John Soane*, R.A., F.R.S. This eminent architect was a native of Reading, in Berkshire, where he was born on the 10th of September, 1752; consequently he must have been in his eighty-fourth year. His father was a bricklayer in humble circumstances. Young Soane showed an early predilection for architecture; and, at fifteen years of age, was placed as a pupil under the late Mr. Dance, who, we believe, was justly considered to be one of the most accomplished architects of our native school in the theory and elegances of art. Afterwards, with his approval, Soane removed to Mr. Holland's office, to acquire practical experience. In 1772, being a student of the Royal Academy, he was awarded the silver medal for the best drawing of the Banqueting House, Whitehall. Four years afterwards, he obtained the gold medal for the best design for a triumphal bridge. He was soon afterwards introduced to King George III. by Sir Wm. Chambers, and was sent to pursue his studies at Rome, with the then Academy pension of 60*l*. per annum, for three years, and the same amount for travelling expenses, out and home. Here he continued until the summer of 1780; and, during his sojourn in Italy, he studied most assiduously the finest of the grand remains of ancient art with which that country abounds. His return to England was owing to pressing invitations from the fanciful and eccentric Hervey Earl of Bristol and Bishop of Derry, "to come and be employed by him," as they had been upon terms of great intimacy in Rome; but the affair came to nothing, from the usual capriciousness of the Earl.

Mr. Soane, though much vexed at these disappointments, appears to have entered into many competitions, many of them successful, for public works and private buildings; and, on the death of Sir Robert Taylor, in 1788, he was appointed architect and surveyor to the Bank of England, but not without a severe competition, in which there were thirteen competitors. To this success Sir John Soane has attributed the commencement of those scurrilous attacks, by which for many years his professional character was assailed, under the appellation of "the modern Goth." In 1791, he was appointed Clerk of the Works to St. James's Palace, the Parliament Houses, and other public buildings. This office he resigned, after having held it for some years. In 1795, he was appointed Architect to the Royal Woods and Forests, &c., which he likewise held for several years. In 1794, a Committee of the House of Lords directed him to consider what alterations could properly be made to render the House, offices, &c., more convenient and commodious. He accordingly made all the requisite surveys, plans, elevations, and a number of designs; in which was first introduced the noble idea of enriching the "Hall of Rufus," "the Court of Requests," and "the Painted Chamber," with painting and sculpture, to commemorate great public actions and distinguished talent; to which the King gave his decided approval; and it was expected that he would have had the execution of the work; but, by one of those court intrigues, which are always doing mischief to real merit, and fostering quacks and pretenders, as we find it to be the case at the present day, Mr. Soane was jockeyed out of it, and the late James Wyatt got the appointment; who, whatever his general merit may have been, certainly showed any thing but taste or capacity in the works he erected here, and which, it is to the advantage of his architectural pretensions, have been reduced to ashes. In 1795, Mr. Soane was elected an Associate, and in 1802, a member, of the Royal Academy. In 1800, and the few subsequent years, he was engaged in enlarging the Bank of England, and giving it, so far as the situation will admit, a symmetrical and architectural unity of character, as we now see it. In 1806, he was elected Professor of Architecture to the Royal Academy. His predecessor, Mr. Dance, though he held the appointment many years, did not deliver any lectures. Mr. Soane, in 1809, gave his first lecture, which was very favourably received; and he repeated it in 1810, when it was received with still greater approbation, which was likewise extended to those that followed in succession, until the fourth, wherein some just and proper remarks were made on the bad taste of enriching one of the fronts of a building with the orders of architecture, and other architectural embellishments, whilst the others were left perfectly plain and unadorned. Some modern works, recently finished, were adduced as examples, among which were, the new Covent Garden Theatre (recently erected), Uxbridge House, Lansdowne House, and others in the metropolis, in which good taste was sacrificed to a miserable parsimony. The public and the profession were generally pleased with those observations; but it was complained of to the Academy by one of the members; and we are sorry to say that it remains on record, not to the honour of the men of that day who composed the Council, "that no comments on the works of living artists should be introduced into the lectures of the Royal Academy;" thus improperly abandoning one of the best principles of teaching, which is to detect and point out to the student immediately the bad taste and false principles which are in actual operation, and which it is the bounden duty of a lecturer to expose, that the contagion of bad taste may be checked as soon as possible. In 1807, Mr. Soane was appointed Clerk of the Works to the Royal Hospital at Chelsea, and soon after erected the new Infirmary and other buildings connected with that establishment. In 1808, he was applied to for the purpose of furnishing a plan, &c., for the academical institution, Belfast; Mr. Soane furnished the Committee with the plans and drawings for the work as it is now executed, and refused to accept any fees for them. The Committee, however, elected him a Life-Governor, with the privileges of the largest subscribers. He was employed, both at Cambridge and Oxford, to make alterations and improvements in some of the colleges, particularly the Brazenose. The Dulwich Gallery, and Mausoleum of Mr. and Mrs. Desenfans, and Sir F. Bourgeois, are likewise his work. In 1818, he was chosen Grand Superintendent of Works to the fraternity of Freemasons; in 1826, he built the new Masonic Hall, adjoining Freemasons' Tavern, in Great Queen Street, and gave 500*l.* towards the expense of its erection. In 1815, he was appointed one of the architects to the Office of Works, which he held until the office was abolished in 1832. In 1818, he planned "The National Debt Redemption Office," in the Old Jewry. In 1820, he was directed by the Lords of the Treasury to propose plans for the new Law Courts, being seven in number; this, no doubt, was, under its peculiar circumstances, a task of great difficulty; and, had he not been most improperly interfered with by a Committee of the Honourable House, who, being all mere amateurs, and, consequently, ignorant of the nature of the subject, we are sure that the original plan would have prevented the greater part of the inconveniences now properly complained of. In 1821, he made designs for a new palace, to be constructed on Constitution Hill: the design was magnificent, and would have been, if carried into effect, a palace worthy of a British monarch; but low jobbing and court intrigue unfortunately succeeded in preferring Buckingham House and Nash. In 1822 and 1823, Mr. Soane was employed in improving the King's entrance to the House of Lords, in erecting the Scala Regia, the Royal Gallery, and additional Committee Rooms, &c. In the same period, he was engaged to erect a building to accommodate the officers of the Board of Trade and Privy Council, at Whitehall. In 1824, he was elected Architect to the Royal College of Surgeons, and a member of the Royal Society. In 1827, he gave a subscription of 1000*l.* to the committee for erecting the monument to his Royal Highness the Duke of York, and brought out another volume of his architectural works; a copy of the entire work being presented to the Emperor Nicholas, who sent a diamond ring and a letter of thanks in return. In 1828, he gave the sum of 105*l.* to the Literary Fund Society, and 500*l.* to the British Institution, in Pall Mall; and, in 1831, received the honour of knighthood. In 1833, he completed the new State Paper Office; and, on the 16th of October in the same year, borne down by domestic calamities, his sight much impaired, and having passed his eightieth year, he retired from a profession in which he had been engaged for more than sixty years, and tendered his resignation to the Governor and Directors of the Bank of England, in whose service he had been for forty-five years and who expressed the warmest thanks for his services, and regret for the cause of his resignation. He then set seriously about the magnificent idea he had long formed of bequeathing his large and valuable collection of works of ancient and modern art in perpetuity to the nation, for the benefit of students in the arts, and especially for the advancement of architectural knowledge, and to improve the public taste generally. This donation to the public may be valued, on the most moderate calculation, at 60,000*l.* This noble purpose, which places him high in the class of benefactors to his country, he lived to see completed by Act of Parliament, with this fine reflection on his mind; that he had previously made suitable provision for each of his relatives, by testamentary bequests and other legal documents, who had any claims upon his recollection or his bounty.* In 1835, the architects presented him a splendid medal, in token of their approbation of his conduct and talents. He gave the sum of 250*l.* to the Architectural Society, and 750*l.* to the Institute of British Architects.

In May last, he had a very severe attack of erysipelas, from which it was not expected that he could recover; yet the uncommon vigour of his constitution not only brought him round, but for some months afterwards, and until within a few days of his death, his health, strength, and attention to his ordinary pursuits were nearly equal to what they had been ten years previously. During those months he made several important additions to, and alterations in, his museum; particularly in purchasing the valuable collection of drawings by Mr. George Dance, R. A., the eminent architect (his old master). For these he gave 500*l.* He likewise completed a publication, descriptive of his house and museum.

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* He placed in the hands of four trustees, Lord Farnborough, the late Sir Thomas Lawrence, Sir Francis Chantrey, and Sir Benjamin Stephenson, for the use of his grandson and his three grand-daughters, a sum of 10,000*l.* Three per Cent Consols, and 10,000*l.* Three per Cents Reduced.

On Thursday evening, after nine, he became worse, and on Friday, at half-past three o'clock, was no more. He died without the slightest pain; and his attendants, for some time, did not believe he had departed. Sir John Soane's medical attendant stated the cause of his death to be an affection of the heart.

The above, with some corrections supplied by a friend of the deceased, is from the *Morning Herald* of Jan. 24. The same friend has enabled us to add what follows: —

Only a few weeks before his death, he erected a small architectural or ornamental enclosure for the reception of the Dance drawings, which lie enshrined in it in the middle of the library. This evinces the respect he had, in common with every admirer of true architectural talent, for the works of that great architect.

His love for his art was extraordinary; and almost to the last moment of his existence he was engaged in the study of it. The last design he busied himself upon, for his own amusement merely, was an erection to receive the Wellington Statue, now talked of for the city; and he applied himself to it with almost his youthful vigour. It was usual with him, on these occasions, to bestow the same minute attention to the drawings as if the building was really going to be erected.

Sir John Soane has left the bulk of his property to his grandson, Master John Soane, and his two youngest granddaughters; all three the children of the late Mr. John Soane, his eldest son. To the family of his other son he has left 200*l.* per annum. His old Clerks of the Works he has liberally provided for: to Mr. Payne, his Clerk of the Works at the Bank for near forty years, he has left, or rather continued to him, his pension of 150*l.* per annum. This gentleman has the same pension from the Bank. To Mr. Hall, the labourer in trust at Chelsea Hospital, he has left 50*l.* per annum. The curatorship of the Soane Museum, now one of the most honourable and important situations in the profession, he has left to Mr. George Bailey, who has been connected with him nearly twenty-eight years. To Mr. Charles James Richardson, who has been with him about fourteen years, he has left a very handsome legacy; the largest, indeed, after those to his own family. Two of his old servants are likewise remembered in his will.

The following persons attended his funeral:—Master John Soane, Sir Francis Chantrey, Sir Benjamin Stephenson, Mr. Bicknell, Mr. Higham, Mr.. Foxhall, Mr. Pennington, Mr. G. Bailey, Mr. C. J. Richardson, Mr. Payne, Mr. Hall; Sir Martin A. Shee, P. R.A.; Mr. Howard, R.A.; Mr. Leslie, R.A.; Mr. Stanfield, R.A.; Mr. Etty, R.A.; Mr. Pickersgill, R.A. From the Institute of British Architects: — Mr. Robinson, Mr. Papworth, Mr. Donaldson, Mr. Goldicutt, Mr. Kendall, Mr. Seward, Mr. Taylor, Mr. Moore. Architectural Society: — Mr. Ferry, Mr. Walker, Mr. Hakewill, and Mr. Mair.

The above is the order of the procession to the tomb, which is in St. Giles's burial-ground, adjoining old St. Pancras Church. — *B. Feb.* 7. 1837.

Monsieur Hittorf read, at a meeting of the *Société libre des Beaux Arts*, at Paris, an account of the house and museum of Sir John Soane, on the 29th of November last. In noticing the character and productions of the professor, M. Hittorf rendered full justice to all his merits; and, in conclusion, recommended that Sir John Soane should be elected an Honorary Member of that Society; a proposition which was carried with acclamation. A copy of M. Hittorf's address on that occasion was sent to London, to be transmitted to Sir John Soane, but did not arrive till after his death.

THE

ARCHITECTURAL MAGAZINE.

APRIL, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *An Experimental Enquiry into the Modes of warming and ventilating Apartments.* By Andrew Ure, M.D. F.R.S., &c. Read before the Royal Society on the 16th of June, 1836. Communicated by the Author.

The subjects of warming and ventilating apartments, in reference to the comfort and health of their inmates, have lately excited a great deal of attention. The commissioners delegated by government to enquire into the circumstances of factory labour adverted in their reports to some of the expedients employed for ventilating certain cotton mills; and, more recently, a select committee of the House of Commons has considered and reported upon the best mode of ventilating and warming the new Houses of Parliament. In an extensive tour which I made, during the two preceding seasons, through England, France, and Belgium, to investigate the applications of chemical and mechanical science to manufactures, I paid particular attention to these subjects, so interesting to science, as well as humanity; and I have had my mind professionally turned to them by the Directors of the Customs Fund of Life Assurance, on account of the very general state of indisposition and disease prevailing among those of their officers (nearly 200 in number) engaged on duty in the Long Room of the Custom House, London. I now respectfully submit the result of my observations and experiments on these points of public interest to the Royal Society.

The symptoms of disorder experienced by the several gentlemen (about twenty in number), whom I examined out of a great many who were indisposed, were of a very uniform character. The following is the result of my researches: —

A sense of tension or fulness in the head, with occasional flushings of the countenance, throbbing of the temples, and vertigo, followed, not unfrequently, with a confusion of ideas, very disagreeable to officers occupied with important, and sometimes intricate, calculations. A few are affected with unpleasant perspiration on their sides. The whole of them complain of a remarkable coldness and languor in their extremities, more especially the legs and feet, which has become habitual, denoting languid circulation in these parts, which requires to be counteracted by the application of warm flannels on going to bed. The pulse is, in many cases, more feeble, frequent, sharp, and irritable than it ought to be, according to the natural constitution of the individuals. The sensations in the head occasionally rise to such a height, notwithstanding the most temperate regimen of life, as to require cupping, and at other times depletory remedies. Costiveness, though not a uniform, is yet a prevailing symptom.

The sameness of the above ailments, in upwards of one hundred gentlemen, at very various periods of life, and of various temperaments, indicates clearly sameness in the cause.

The temperature of the air in the Long Room ranged, in the three days of my experimental inquiry, from 62° to 64° of Fahrenheit's scale; and in the Examiner's Room it was about 60°, being kept somewhat lower by the occasional shutting of the hot-air valve, which is here placed under the control of the gentlemen; whereas that of the Long Room is designed to be regulated in the sunk story, by the fireman of the stove, who seems sufficiently careful to maintain an equable temperature amidst all the vicissitudes of our winter weather. Upon the 7th of January, the temperature of the open air was 50°; and on the 11th it was only 35°; yet upon both days the thermometer in the Long Room indicated the same heat of from 62° to 64°.

The hot air discharged from the two cylindrical stove-tunnels into the Long Room was at 90° upon the 7th, and at 110° upon the 11th. This air is diluted, however, and disguised by admixture with a column of cold air before it is allowed to escape. The air, on the contrary, which heats the Examiner's Room undergoes no such mollification, and comes forth at once in an ardent blast of fully 170°; not unlike the simoom of the desert, as described by travellers. Had a similar nuisance, on the greater scale, existed in the Long Room, it could not have been endured by the merchants and other visiters on business: but the disguise of an evil is a very different thing from its removal. The direct air of the stove, as it enters the Examiner's Room, possesses, in an eminent degree, the disagreeable smell and flavour imparted to air by the action of red-hot iron; and, in spite of every attention on the part of the fireman to sweep the stove apparatus from time to time, it carries along with it abundance of burned dusty particles.

The leading characteristic of the air in these two rooms is its dryness and disagreeable smell. In the Long Room, upon the 11th, the air indicated, by Daniell's hygrometer, 70 per cent of dryness, while the external atmosphere was nearly saturated with moisture. The thermometer connected with the dark bulb of that instrument stood at 30° when dew began to be deposited upon it; while the thermometer in the air stood at 64°. In the court behind the Custom-house, the external air being at 35°, dew was deposited on the dark bulb of the hygrometer by a depression of only 3°; whereas in the Long Room, on the same day, a depression of 34° was required to produce that deposition. Air, in such a dry state, would evaporate 0·44 in. depth of water from a cistern in the course of twenty-four hours; and its influence on the cutaneous exhalents must be proportionably great.

As cast iron always contains, besides the metal itself, more or less carbon, sulphur, phosphorus, or even arsenic, it is possible that the smell of air passed over it in an incandescent state may be owing to some of these impregnations; for a quantity of noxious effluvia, inappreciably small, is capable of affecting not only the olfactory nerves, but the pulmonary organs. I endeavoured to test the air as it issued from the valve in the Examiner's Room, by presenting to it pieces of white paper moistened with a solution of nitrate of silver, and perceived a slight darkening to take place, as if by sulphurous fumes. White paper, moistened with sulphuretted hydrogen water, was not in the least discoloured. The faint impression on the first test paper may be, probably, ascribed to sulphurous fumes, proceeding from the ignition of the myriads of animal and vegetable matters which continually float in the atmosphere, as may be seen in the sunbeam admitted into a dark chamber: to this cause, likewise, the offensive smell of air, transmitted over red-hot iron, may, in some measure, be attributed, as well as to the hydrogen resulting from the decomposition of aqueous vapour, always present in our atmosphere in abundance; especially close to the banks of the Thames, below London Bridge.

When a column of air sweeps furiously across the burning deserts of Africa and Arabia, constituting the phenomenon called simoom by the natives, the air becomes not only very hot and dry, but highly electrical, as is evinced by lightning and thunder. Dry sands, devoid of vegetation, cannot be conceived to communicate any noxious gas or vapour to the atmosphere, like the malaria of marshes, called miasmata: it is, hence, highly probable that the blast of the simoom owes its deadly malignity, in reference to animal as well as vegetable life, simply to extreme heat, dryness, and electrical disturbance. Similar conditions, though on a smaller scale, exist in what is called the bell, or cockle, apparatus for heating the Long Room and the Examiner's apartment in the Custom-house. It consists of a series of inverted, hollow, flattened pyramids of cast iron, with an oblong base, rather small in their dimensions, to do their work sufficiently in cold weather when moderately heated. The inside of the pyramids is exposed to the flames of coke furnaces, which heat them frequently to incandescence, while currents of cold air are directed to their exterior surfaces by numerous sheet-iron channels. The incandescence of these pyramids, or bells, as they are vulgarly called, was proved by pieces of paper taking fire when I laid them on the summits. Again, since air becomes electrical when it is rapidly blown upon the surfaces of certain bodies, it occurred to me that the air which escapes into the Examiner's Room might be in this predicament. It certainly excites the sensation of a cobweb playing round the head, which is well known to all who are familiar with electrical machines. To determine this point, I presented a condensing gold-leaf electrometer to the said current of hot air, and obtained faint divergence, with negative electricity. The electricity must be impaired in its tension, however, in consequence of the air escaping through an iron grating, and striking against the flat iron valves, both of which will tend to restore the electric equilibrium. The air blast, moreover, by being diffused round the glass of the condenser apparatus, would somewhat mask the appearances. Were it worth while, an apparatus might be readily constructed for determining this point, without any such sources of fallacy. The influence of an atmosphere charged with electricity in exciting headach and confusion of thought in many persons, is universally known.

The fetid burned odour of the stove air, and its excessive avidity for moisture, are of themselves, however, sufficient causes of the general indisposition produced among the gentlemen who are permanently exposed to it in the discharge of their public duties.

From there being nearly a vacuum, as to aqueous vapour, in the said air, while there is nearly a plenum in the external atmosphere round about the Custom-house, the vicissitudes of feeling in those who have occasion to go out and in frequently must be highly detrimental to health. The permanent action of an artificially desiccated air on the animal economy may be stated as follows: —

The living body is continually emitting a transpirable matter, the quantity of which, in a grown up man, will depend partly on the activity of the cutaneous exhalents, and partly on the relative dryness or moisture of the circumambient medium. Its average amount, in common circumstances, has been estimated at 20 ounces in twenty-four hours.

When plunged in a very dry air, the insensible perspiration will be increased; and, as it is a true evaporation or gasefaction, it will generate cold proportionably to its amount. Those parts of the body which are most insulated in the air, and furthest from the heart, such as the extremities, will feel this refrigerating influence most powerfully. Hence the coldness of the hands and feet, so generally felt by the inmates of the apartment, though its temperature be at or above 60°. The brain, being screened by the skull from this evaporating influence, will remain relatively hot, and will get surcharged, besides, with the fluids which are repelled from the extremities by the condensation, or contraction, of the blood-vessels caused by cold. Hence the affections of the head, such as tension, and its dangerous consequences. If sensible perspiration happen, from debility, to break forth from a system previously relaxed, and plunged into dry air, so attractive of vapour, it will be of the kind called a cold clammy sweat on the sides and back, as experienced by many inmates of the Long Room.

Such, in my humble apprehension, is a rationale of the phenomena observed at the Custom-house. Similar effects have resulted from hot-air stoves of a similar kind in many other situations.

After the most mature physical and medical investigation, I am of opinion that the circumstances above specified cannot act permanently upon human beings, without impairing their constitutions, and reducing the value of their lives. The Directors of the Customs Fund are therefore justified in their apprehensions, "that the mode of heating the Long Room is injurious to the health of persons employed therein, and that it must unduly shorten the duration of life."

It is evident, moreover, that the public service must suffer serious inconvenience in consequence of so many revenue officers, of great experience in business, being constantly exposed to the influence of a cause under which the most perspicacious intellect may become confused, and the most vigorous frame may be frequently disqualified for the discharge of a daily recurring duty. In fact, the absences among the officers of the Long Room in consequence of indisposition must be detrimental to the service, and may, for the most part, be traced to the malaria of the stoves.

For the purpose of producing a comfortable temperature in the air of the rooms occupied by individuals of a sedentary calling, like the in-door officers of His Majesty's Customs, cast-iron pipes, circulating steam a few degrees above the 212th degree of Fahrenheit's scale, should be distributed along the floor, close to the line of desks within which the officers sit. A corresponding range of small orifices should be made in the lower part of the desk partitions, for permitting the free ingress of the warm air around their limbs; and a series of sliding plates should be attached, for regulating these orifices, so as to enable each individual to suit the supply of warmth to his peculiar feelings and constitution. Self-acting register valves should, at the same time, be fixed aloft in the Long Room, which would regulate the discharge of foul air, and maintain a wholesome ventilation in the air below.

Nothing can be more preposterous, in an economical and scientific point of view, than the mode of introducing the hot air into the Long Room, through two wide vertical tunnels in the line of its centre, whence it rises rapidly to the lofty roof, and can communicate warmth to the inmates, seated near the floor, only by reverberating downwards in a polluted state of mixture, with many cutaneous and pulmonary exhalations. Whereas the great principle of ventilation is, never to present the same portion of air twice over to the human lungs, but to supply them at each fresh inspiration with pure aerial particles, in a genial thermometric and hygrometric condition. Such air should be poured in, rightly prepared, from innumerable orifices in or near the floor, and pass up over the living frames, never to be thrown back upon them, but to be discharged through an equivalent number of orifices in the ceiling, too small to permit a counter current of cold air downwards. By such ceaseless circulation, comfort and health would be permanently secured, at probably one fourth part of the expenditure of fuel now consumed in corrupting the aerial element, and in placing many valuable lives in jeopardy.

In the recent report of the Parliamentary Committee, it is truly surprising that not a syllable is said about the methods of warming and ventilating apartments employed in the factories, although they afford unquestionably the best models for imitation, being the results of innumerable experiments made on a magnificent scale, with all the lights of science, and all the resources of our ablest civil engineers.

The warming is effected by horizontal ranges of cast-iron steam-pipes, properly supported or suspended, so as to give free play to their expansion and contraction from alternations of temperature, as well as to secure the equable distribution of low-pressure steam, and the ready efflux of the water of condensation. There cannot be a single doubt of this system being the only one which can, with safety, certainty, and economy, be used in preparing in one or more antechambers a body of genial air, to be thereafter diffused through the Houses of Parliament and their subordinate committee rooms. The only point which can admit of discussion is, the mode of renewing the atmosphere, or what is commonly called ventilation. In this respect, also, the engineers of the metropolis will find themselves outstripped by those of Manchester, and some other factory districts.

Various schemes were resorted to, at the suggestion of several ingenious projectors, for ventilating the old House of Lords. Two, at least, of the plans consisted in the erection of a stove furnace in a chamber over that house, and in drawing the air for the supply of that furnace from the apartment below, so as to suck out the foul and hot atmosphere accumulated under its ceiling. The ventilating power of such an apparatus would be proportional to the quantity of fuel consumed, and the rapidity of its combustion; both being dependent, of course, upon the height of the chimney. It is well known that the contrivance was quite inefficient to refresh the air when it was most wanted; namely, when the house was crowded.

The quantity of air discharged in a given time by chimney draughts does not seem to have been hitherto made the subject of very accurate experiments. Whenever a certain volume of air is heated from the freezing to the boiling point of water, it expands into one volume and three eighths; and it therefore tends to rise up with a force equal to the difference between the weight of the volume of the cold air, whose space it now occupies, and its own weight; that is, in the present case, the difference between one and three eighths, and one; or 11 and 8.

Let us suppose a chimney, 50 yards high, to be supplied constantly at the bottom with air heated to 212°, while the external atmosphere is 32° Fahr. The tunnel, being full of the hot air, its ascensional force will be obviously the difference between the weights of two columns of air, each 50 yards high, the one at the boiling, and the other at the freezing, temperature of water: the force will, likewise, be the same as that acting in a siphon filled with air, and having one of its arms longer than the other, by the difference between the bulk of the cold and the hot air. This columnar difference of weight is the sole cause of the movement; and it is well known, both by theory and experiment, that the velocity of discharge through this columnar difference, which, in the present case, is 18¾ yards, would be equal to the velocity which a solid body would acquire in falling freely from that height. But a body falling from the height of 56¼ ft. would pass through 60 ft. per second, which is the velocity of efflux sought. A small deduction ought to be made from this number, on account of the increased density of the burned air in chimneys, in consequence of the replacement of a portion of its oxygen by carbonic acid.

The density of burned air, as it issues from chimney-tops, compared with that of atmospheric air of the same temperature, may be reckoned as 104⅛ to 100. In practice, it will be found convenient to make the calculations as if the air were chemically the same, and to multiply the velocity found by 0·97; which would reduce the above 60 ft. to 58·2 ft.

Such are the results of theory; but they vary considerably from practice, in consequence of the varying lengths and forms of the chimney, which change the velocity of the aerial currents by friction, refrigeration, &c. In high chimneys of wrought iron, like those of steam-boats, the refrigeration is considerable, and causes a diminution of velocity far greater than what occurs in a factory stalk of well-built brickwork. In comparing the numbers resulting from the trials made on chimneys of different materials and of different forms, it has been concluded that the obstruction to the draught of the air, or the deduction to be made from the theoretical velocity of efflux, is directly proportional to the length of the chimneys and to the square of the velocity, and inversely to their diameter. With an ordinary wrought-iron pipe, of from 4 in. to 5 in. diameter, attached to an ordinary stove burning good charcoal, the difference is prodigious between the velocity calculated by the above theoretical rule, and that observed by means of a stop-watch, and the ascent of a puff of smoke from a little tow, dipped in oil of turpentine, thrust quickly into the fire. The chimney being 45 ft. high, the temperature of the atmosphere 68° Fahr., the velocity per second was,—

Trials.		By Theory.		By Experiment.		Mean Temperature of Chimney.
1	-	26·4 feet	-	5 feet.	-	190° Fahr.
2	-	29·4	-	5·76	-	214°
3	-	34·5	-	6·3	-	270°

To obtain congruity between calculation and experiment, several circumstances must be introduced into our formulæ. In the first place, the theoretical velocity must be multiplied by a factor, which is different according as the chimney is made of bricks, pottery, sheet iron, or cast iron. This factor must be multiplied by the square root of the diameter of the chimney (supposed to be round), divided by its length, increased by four times its diameter. Thus, for pottery, its expression is $2{\cdot}06\sqrt{\frac{D}{L+D}}$; D being the diameter, and L the length, of the chimney.

A pottery chimney, 33 ft. high, and 7 in. in diameter, when the excess of its mean temperature above that of the atmosphere was 205° Fahr., had a pressure of hot air equal to 11·7 ft., and a velocity of 7·2 ft. per second. By calculating from the last formula, the same number very nearly is obtained. In none of the experiments did the velocity exceed 12 ft. per second, when the difference of temperature was more than 410° Fahr.

Every different form of chimney would require a special set of experiments to be made for determining the proper factor to be used.

This troublesome operation may be saved by the judicious application of a delicate differential barometer, such as that invented by Dr. Wollaston; though this instrument does not seem to have been applied by its very ingenious author in measuring the draughts or ventilating powers of furnaces.

If into one leg of this differential siphon, water be put, and fine spermaceti oil into the other, we shall have two liquids, which are to each other in density as the numbers 8 and 7. If proof spirit be employed instead of water, we shall then have the relation of very nearly 20 to 19. I have made experiments on furnace draughts with the instrument in each of these states, and find the water and oil siphon to be sufficiently sensible: for the weaker draughts of common fireplaces the spirits and oil will be preferable barometric fluids.

To the lateral projecting tube of the instrument, as described by Dr. Wollaston, I found it necessary to attach a stopcock, in order to cut off the action of the chimney, while placing the siphon, to allow of its being fixed in a proper state of adjustment, with its junction line of the oil and water at the zero of the scale. Since a slight deviation of the legs of the siphon from the perpendicular changes very considerably the line of the level, this adjustment should be made secure by fixing the horizontal pipe tightly into a round hole bored into the chimney-stalk, or drilled through the furnace door. On gently turning the stopcock, the difference of atmospherical pressure, corresponding to the chimney draught, will be immediately indicated by the ascent of the junction-line of the liquids in the siphon. This modification of apparatus permits the experiment to be readily rectified by again shutting off the draught, when the air will slowly re-enter the siphon; because the projecting tube of the barometer is thrust into the stopcock, but not hermetically joined; whereby its junction line is allowed to return to the zero of the scale in the course of a few seconds.

Out of many experiments made with this instrument, I shall content myself with describing a few, very carefully performed at the breweries of Messrs. Truman, Hanbury, and Buxton, and of Sir H. Meux, Bart., and at the machine factory of Messrs. Braithwaite; in the latter of which I was assisted by Captain Ericsson. In the first trials at the breweries, the end of the stopcock attached to the differential barometer was lapped round with hemp, and made fast into the circular peep-hole of the furnace door of a wort copper, communicating with two upright parallel chimneys, each 18 in. square, and 50 ft. high. The fire was burning with fully its average intensity at the time. The adjustment of the level being perfect, the stopcock orifice was opened, and the junction level of the oil and water rose steadily, and stood at 1¼ in., corresponding to $\frac{1\cdot25}{8} = 0\cdot156$ of 1 in.

of water, or a column of air 10·7 ft. high. This difference of pressure indicates a velocity of 26 ft. per second. In a second set of experiments, the extremity of the stopcock was inserted into a hole bored through the chimney-stalk of the boiler of a Boulton and Watt steam-engine of twenty horses' power. The area of this chimney was exactly 18 in. square at the level of the bored hole, and its summit rose 50 ft. above it. The fire-grate was about 10 ft. below that level. On opening the stopcock, the junction line rose 2¼ in. This experiment was verified by repetition on different days, with fires burning at their average intensity, and consuming fully 12 lb. of the best coals hourly for each horse's power, or nearly one ton and a third in twelve hours. If we divide the number 2¼ by 8, the quotient 0·28 will represent the fractional part of 1 in. of water, supported in the siphon by the unbalanced pressure of the atmosphere in the said chimney; which corresponds to 19¼ ft. of air, and indicates a velocity in the chimney current of 35 ft per second. The consumption of fuel was much more considerable in the immense grate under the wort copper, than it was under the steam-engine boiler.

In my experiments at Messrs. Braithwaite's factory, the maximum displacement of the junction line was 1 in., when the differential oil and water barometer was placed in direct communication with a chimney 15 in. square, belonging to a steam boiler, and when the fire was made to burn so fiercely, that, on opening the safety-valve of the boiler, the excess of steam beyond the consumption of the engine rushed out with such violence as to fill the whole premises. The pressure of one eighth of an inch of water denotes a velocity of draught of 23·4 ft. per second.

The differential barometer was next attached to the suction-chamber of a ventilator fan, used for drawing the air through the fireplace, in the ingenious steam boiler of Messrs. Braithwaite and Ericsson's patent construction. The result was remarkable. Here the draught was so great, that it became necessary to remove the oil, and to employ merely a water siphon. When the speed of the circumference of the revolving vanes was 120 ft. per second, the suction was sufficient to support steadily 2 in. of water. This aqueous column, however, indicates a velocity of only 94 ft. per second, instead of 120. The pressure of air equivalent to this velocity is 224 vertical feet; equal to a column of water 3¼ in. high. But we must consider that the true velocity of the impelling points of the vanes is only seven eighths of the velocity of their tips, or 105 ft. per second. If this circumstance be not taken into account, we should be led to infer that, in an eccentric ventilator of the best centrifugal form, so much air escapes, by inertia, between the vanes and the sides of the box in which they revolve, as to cause a loss of nearly one fourth of velocity in the issuing current. Every principle of physics forbids us to suppose, as some engineers have hastily done, that the siphon pressure indicates only three fourths of the effects of the current upon the atmospheric equilibrium. On this point we shall presently offer some other illustrations.

When the wings of the fan were made to revolve with a velocity of 180 ft. per second, by connecting its rigger band with a larger driving pulley, the difference of water level in the two legs of the siphon amounted to only 3 in.; an unbalanced pressure, which indicates a velocity of efflux in the air of only 115 ft. per second, and a defalcation of effect, therefore, tantamount to 30 per cent, which is evidently due to the greater effect of inertia at that degree of speed; the effective velocity of the vanes being taken, as formerly, at seven eighths of that of their extremities.

In a third set of experiments, when the extremities of the vanes revolved with a velocity of 80 ft. per second, the water stood 1 in. higher in the one leg of the siphon than in the other. This difference of level indicates a velocity of 66 ft. per second. Here the loss of velocity, from the inertia and the eddies of the lateral portions of air, is only 6 per cent upon the effective velocity.

The following table exhibits the velocities of the air corresponding to different altitudes of the differential water barometer: —

12 inches of water correspond to a velocity of	231 feet per second.
6	163
3	115
2	94
1½	81
1	66
½	47
¼	33
⅐	25
⅛ = 1 in. of the water-oil siphon	23·4

It has been ascertained, that a power equivalent to one horse, in a steam-engine, will drive, at the rate of 80 ft. per second, a fan the effective surfaces of whose vanes, and whose inhaling conduits, have each an area of 18 in. square, equal to that of the steam-boiler chimney mentioned above. The velocity of air in the chimney, produced by a consumption of fuel equivalent to the power of twenty horses, was no more than 35 ft. per second; while that of the fan, as impelled by the power of one horse, was 66 ft. per second. Hence it appears, that the economy of ventilation by the fan is to that by the chimney draught as 66 is to $\frac{35}{20}$, or as 38 to 1. It is obvious, therefore, that, with one bushel or ton of coals consumed in working a steam-impelled eccentric fan, we can obtain as great a degree of ventilation, or we can displace as great a body of air, as we could with 38 bushels or tons of coals consumed in creating a chimney draught. Economy, cleanliness, and compactness of construction are not, however, the sole advantages which the mechanical system of ventilation possesses over the physical. It is infallible, even under such vicissitudes of wind and weather as would essentially obstruct any chimney-draught ventilation, because it discharges the air with a momentum quite eddy-proof, and it may be increased, diminished, or stopped altogether, in the twinkling of an eye, by the mere shifting of a band from one pulley to another, as is practised upon all spinning-machines. No state of atmosphere without, no humidity of air within, can resist its power. It will expel the air of a crowded room, loaded with the vesicular vapours of perspiration, with equal certainty as the driest and most expansive.

The preference due to the mechanical system may be made popularly plain, by considering how little power could be obtained by applying a chimney current to impel machinery, through the agency of the best-going smoke-jack, or any other analogous construction. It is clear that the consumption of fuel, applied through the medium of steam, which produces the power of twenty horses in the above steam-engine, would, by the impulsion of an ascending current of air upon any mechanism, barely do the work of half a horse.

In an analogous experiment made at the brewery of Messrs. Truman, Hanbury, and Buxton, the differential barometer being placed in communication, as above described, with the chimney-stalk of the steam-engine boiler, suffered a change of level in the junction line of oil and water of 2¼ in., equivalent, as before, to 0·28 of 1 in. of water. The chimney had an area of 16 in. by 18 in. at the point where the lateral tube of the barometer was inserted; and it rose 50 ft. above that point.

About 12 lb. of coal were consumed hourly for each horse power, and steam corresponding to the power of fifteen horses, at least, was generated in each boiler. Hence it would appear, that from 180 lb. to 200 lb. of coals were burned hourly to maintain a chimney current of 35 ft. per second, or a discharge of air of 70 cubic feet in that time. This result agrees as nearly with that obtained at Sir Henry Meux's brewery as can be expected in experiments of this nature. The coal employed in the latter establishment is of the excellent Welch quality called Llangennech, which burns without smoke. Were other proprietors of great manufactories to imitate this patriotic example, one of the worst nuisances of London would be abated.

The value of fans to sweeten the atmosphere is beginning to be fully appreciated in the factories, more especially in the power-loom apartments, where several hundred persons are congregated together in a moderate space. The beneficial mode of mounting them, with this view, described in the *Philosophy of Manufactures* has been instrumental in drawing the attention of manufacturers to so simple and efficacious a means of promoting the health of their work-people. In these circumstances, it will appear somewhat surprising that none of the members of the late Parliamentary Committee, nor any of the scientific gentlemen whom they examined, should have made the slightest allusion to mechanical ventilation. This omission will appear the more remarkable, since a celebrated member of the Royal Society, Dr. Desaguliers, one hundred years ago, applied a similar invention, as he says, " to the clearing the House of Commons of foul air." The following paragraph of his memoir deserves peculiar notice, as it shows with what a roundabout of futile expedients the public has been deluded for a century past: —

" In the year 1736," says the doctor, " Sir George Beaumont, and several other members of the House of Commons, observing that the design of cooling the House by the fire machines above described (like the pumping stoves of the Marquis de Chabannes in our day) was frustrated, asked me if I could not find some contrivance to draw the hot and foul air out of the House, by means of some person that should entirely depend upon me; which, when I promised to do, a committee was appointed to order me to make such a machine, which, accordingly, I effected, calling the wheel a centrifugal, or blowing-wheel, and the man that turned it a ventilator. This wheel, though in some things like Papin's Hessian bellows, differs much from it, being more effectual and able to suck out the foul air, or throw in fresh, according as the Speaker pleased to command it; whose order the ventilator waits to receive every day of the session, the wheel being still in use."

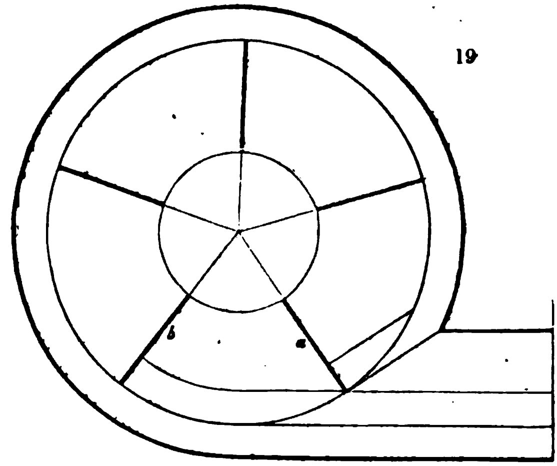
The wheel is described as being 7 ft. in diameter, 1 ft. broad, as taking in air at its centre, and revolving concentrically with its case. It was worked, at least occasionally, from the year 1736 down to the year 1743, when the first edition of the *Experimental Philosophy* of Desaguliers was published. The machine probably remained in the chamber over the House of Commons, and fell a victim to the fire which lately consumed that time-honoured edifice.

As the ventilating fan of Desaguliers was worked by a man turning a winch, it could not have made more than forty revolutions in a minute, whence the mean speed of the tips of its vanes could not have exceeded 15 ft. in a second. In considering, therefore, the defectiveness of its construction, as well as the small area of its discharge-pipe, it was, probably, not misnamed "a philosophical toy" by Sir Jacob Ackworth, then First Lord of the Admiralty, who went down to Woolwich to see its performance in ventilating the hold of His Majesty's ship the Kinsale.

It does not appear that, since the time of Desaguliers, the ventilating fan has been subjected to scientific experiment and examination; for M. Pouillet, a distinguished French philosopher, described last year, in the sixth livraison of his *Portefeuille Industriel*, with high but unmerited commendations, a fan erected at Rouen for blowing a foundery cupola, which, on trial, was quite inefficient in propelling the air, while it shook the floor where it stood with tremendous violence. This fan is of the concentric construction, and must, therefore, expend the chief part of the power applied to drive it, in carrying the air round with its vanes, instead of throwing it off at the discharge-pipe. The English Company of Machine-makers settled at Rouen, to whom it belongs, have been obliged to alter it after the plan now commonly adopted in Lancashire.

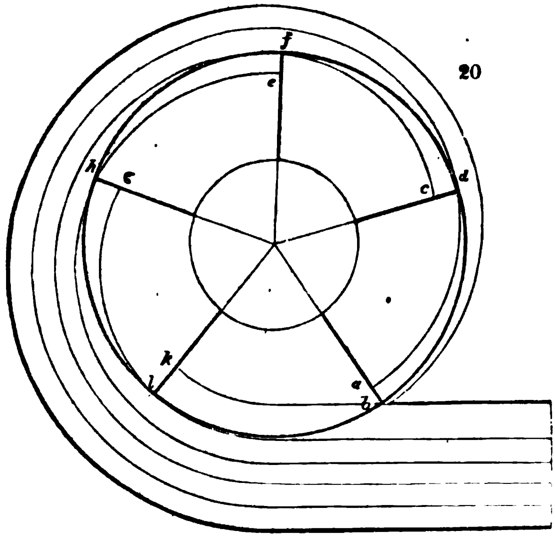
The following sketches (*figs.* 19. to 22.) and experimental illustrations will, I hope, throw some light upon the operations of a ventilating fan.

Fig. 19. is intended to show, by the course of the lines traced



in it, that in the concentric fan only two leaves out of five are effective, and that very little more than one half of the exit pipe is occupied with the regular current of air produced by the rotation of the leaves. The quantity thrown out by virtue of the pressure under which the air is kept by the centrifugal force is, therefore, very small, being intercepted by the current from the leaf *a*, whose tangent crosses the exit pipe completely, and nearly at a right angle.

Fig. 20. shows that in the eccentric fan *all* the leaves are effective, and that the exit pipe is entirely filled with a current from the impulsion of the vanes, independently of any pressure by centrifugal force; except as regards its supply of air from the centre, which obviously depends upon the unbalanced pressure of the atmosphere. That the air cannot enter the exit pipe at less speed than the speed at which the points *a*, *c*, *e*, *g*, *k* revolve, would, at first sight, seem to be certain; for the sum of the lines *a b*, *c d*, *e f*, *g h*, and *k l* is equal to the length of the vertical axis of the exit pipe. And, since the points *a*, *c*, *e*, &c., move at a rate of from $\frac{7}{8}$ to $\frac{8}{9}$ of the extremities of the leaves, the speed will be, at least, $= \frac{7\times 8}{120} = 105$ ft. per second, when the tips move at 120 ft.; whereas, I found 94 ft. per second to be the velocity by experiment. The difference may be ascribed, as I have already said, to the inertia of the air, the lateral communication, and consequent loss of motion, by the eddies thus produced.



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Figs. 21. and 22. represent the section and plan of a fan, which is considered by my ingenious friend Captain Ericsson to be of the best construction. The drawing is so plain as to supersede the necessity of a detailed description.

With regard to the quantity of air thrown out by a fan of this construction, it may be ascertained approximately by multiplying the speed of the points *a*, *c*, *e*, &c., by the sectional area of the exit pipe. The absolute force required to work this fan may be calculated, with sufficient accuracy, in the following way: —

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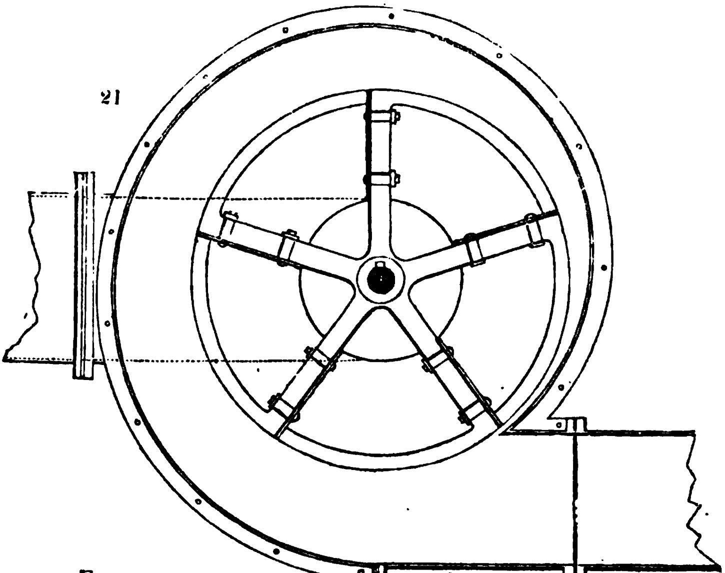

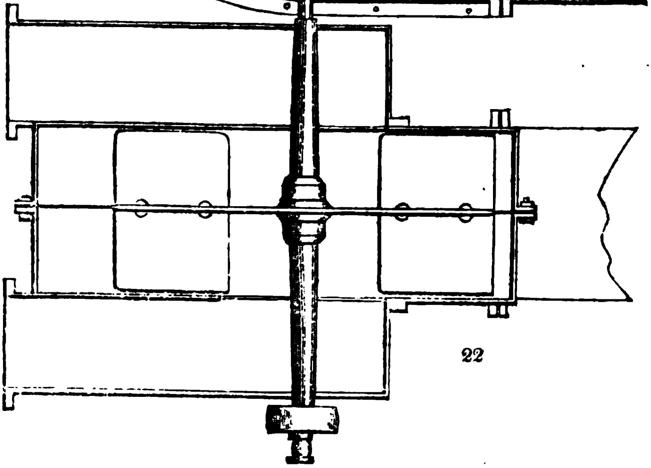

22

Suppose the extremities of the leaves to move at the rate of 80 ft. per second, the sectional area of the exit pipe to be square feet; then $2 \times 80 = 160$ cubic feet; which number, multiplied by 60 seconds, gives a product of 9600 cubic feet of air discharged per minute. This, reduced into weight, will be $\frac{9600}{13} = 738$ lb., put into motion every minute, at the rate of 80 ft. per second. Now, in order to acquire a velocity of 80 ft. per second, a body must be allowed to fall freely through a space of $\frac{80+80}{64} = 100$ ft.;

hence the force required to give to 738 lb. a velocity of 80 ft. per second will be equal to 738 × 100 = 73,800 lb., lifted 1 ft. high. This number, divided by 33,000, will give a quotient equivalent, in pounds, to the impulsive power of 2¼ steam horses for working such a fan.

This calculation agrees well with the result of the trial of a large fan constructed by Captain Ericsson, in the year 1831, at Liverpool, for supporting combustion without a chimney in the furnace of a boiler of 100 horses' power on board the Corsair steam-boat. The diameter of this fan was 4 ft. 6 in.; area of the exit pipe, 3 square feet; effective speed of vanes, 80 ft. per second. To work this fan, he constructed a steam-engine, having a 4-in. cylinder, and 10-in. stroke. The result proved that 120 strokes per minute, with steam of 45 lb. pressure to the square inch, were required to produce a speed of 80 ft. in the fan. The engine being of excellent workmanship, from the well-known factory of Messrs. Fawcett and Preston, at Liverpool, and its motion being directly communicated to the fan, we may fairly conclude that at least 30 lb. to the square inch was the effective pressure of the steam. This number, multiplied by 12, being the area of the piston in square inches, gives a product of 360 lb. for the moving force; and this product, multiplied by 200 ft. (the speed of the piston), is equivalent to 72,000 lb., lifted 1 ft. high per minute, which represents the power of the engine. The quantity of air = 80 × 30 = 240, multiplied by 60 seconds = 14,400 cubic feet per minute. The temperature of the air, as it entered the fan, was about 300°, and was, therefore, reduced in specific gravity to about 20 cubic feet to a pound. Hence $\frac{14400}{20}$ = 720 lb. weight of air thrown out per minute; which, lifted to a height of 100 ft. (the elevation necessary to produce a velocity of 80 ft. per second), would require a force equal to 720 × 100 = 72,000 lb., lifted 1 ft. high, per minute; which quantity exactly coincides with the power of the steam-engine.

It may be worth while to state, though the fact will be obvious to every practical engineer, that, when the exit pipe of the fan was stopped up, and only a little steam admitted into the steam-engine, the fan-leaves moved at an immense speed, the confined mass of air being kept in perpetual rotation; but, whenever the pipe was again opened, so as to admit the stagnant air, the engine was brought nearly to a stand by the weight and inertia opposed to its motion.

The observations of Saussure, and other scientific travellers in mountainous regions, demonstrate how difficult and painful it is to make muscular exertions in highly rarefied air. Even the slight rarefaction of the atmosphere corresponding to a low state of the barometer at the level of the sea often occasions no little discomfort to persons of delicate frame; while the opposite condition of increased pressure, as indicated by a high barometer, has a bracing effect upon both body and mind. Hence, in ventilating crowded apartments, such as the Houses of Parliament, instead of having recourse to chimney draughts, as has been hitherto the invariable practice, and which operates by pumping out, exhausting, or attenuating the air (a fact elegantly illustrated by Dr. Wollaston's differential barometer), we ought, upon every sound principle of physiology, rather to increase the density and spring of the atmosphere, by throwing in a continual current of pure air, brought to the proper degree of temperature and moisture in a chamber of preparation. The air, in its ingress and egress, being placed under the control of valves regulated by index-dials, might have its density modified to a very considerable extent, and thus become fitted to supply the lungs of the inmates with an elastic element, eminently conducive to their health, comfort, and activity.

In applying a principle of this kind to ventilate such a noble pile of buildings as the new Houses of Parliament will be, two or more fans of suitable size should be erected in a small apartment on the ground-floor, for the sake of solidity, and near the centre of the range, for the facility of distribution. These fans should be driven by a small steam-engine, with a boiler heated with coke, on Messrs. Braithwaite's safety plan, emitting no smoke, nor requiring an elevated chimney to disfigure the edifice. From the fans, proper conduits, made of wood, brick, or sheet iron, should be led to the floors of the several chambers to be ventilated. The terminations of these conduits should be furnished with proper valves, for regulating, by a dial index, connected with a cord or wire (like a common bell-pull), the degree of ventilation required, according to circumstances.

In the state of scientific excellence at which the arts have arrived in this country, especially among the factory engineers, no doubt can exist about the propriety of heating the new Houses of Parliament by means of a series of substantial cast-iron pipes, filled with steam, placed in a sunk area below the level-line of the chambers; from which, as a vast magazine, genial air, of a proper thermometric and hygrometric constitution, could be readily distributed, in any desired quantity, to renovate the atmosphere of every lobby and apartment in the buildings. The same boiler which furnishes steam to the engine would be adequate to furnish a supply to the warming pipes in ordinary weather. In very severe weather, however, an additional steam boiler could be brought into action; the main object being to provide such a body of genial pure air as country gentlemen are accustomed to breathe in a fine summer's day on their breezy lawns, but never to be under the necessity of inhaling the mephitic vapours emitted by the lungs and skin of themselves and their neighbours, as has been hitherto the established practice in both Houses of Parliament at every interesting debate.

The quantity of steam-pipe surface, at a temperature of 212° Fahr., requisite to heat a certain volume of air in the large apartments of a well-built cotton mill, has been ascertained with perfect precision; and may be estimated, in round numbers, at one superficial foot of pipe for 150 cubic feet of space, to ensure to the air a steady temperature of 62°, which is the mean summer warmth of the atmosphere in England. It would be prudent to have at command a great magazine of air for the Parliament, since the consumption of fuel under an economical disposition of apparatus would be utterly insignificant, in comparison of the health and comfort of the legislative bodies of the empire.

For the following estimate of the quantity of cast-iron pipe necessary to maintain a healthy and comfortable temperature during winter in the Long Room in the Custom-house, I am indebted to Mr. Fairbairn of Manchester, whose experience and success as a factory engineer are such as to give confidence to his statement. The above apartment is 190 ft. long, 64 ft. wide, and 46 ft. high, containing fully 20,000 cubic yards of space. Two ranges of cast-iron pipes, 8 in. in diameter, properly distributed upon the floor, close to the bottom of the desk-partitions along the two sides and ends of the room, having arched junction pipes of wrought iron 2 in. in diameter, rising round the entrance doors, will be fully adequate to warm it in the coldest winter weather of this climate. A suitable low-pressure self-feeding steam-boiler, with proper pipes and mountings, would, at the usual factory prices, cost no more than 500*l.* Upon this plan, less than one half of the quantity of fuel would be required, of what is now consumed by the air-roasting furnaces, in generating malaria, discomfort, and disease.

Among the stove-doctors of the present day, none are more dangerous than those who, on pretence of economy and convenience, recommend to keep a large body of coke burning slowly, with a slow circulation of air. An acquaintance with chemical science would teach them that, in the obscure combustion of coke or charcoal, much carbonic oxide is generated, and much fuel consumed, with the production of little heat; and physical science would teach them that, when the chimney draught is languid, the burned air is apt to regurgitate through every seam or crevice, with the imminent risk of causing asphyxia or death to the inmates of apartments so preposterously heated. To obtain the maximum quantity of heat from fuel, its combustion ought to be very vivid, and the caloric thus evolved diffused over the largest possible surface of conducting materials. This principle has been judiciously applied in several French factories. Great care must be taken not to suffer the surfaces to be heated above 240° Fahr. It has been proved that workpeople employed in calico-drying rooms heated by such means become emaciated, wan, and sickly, while they remain perfectly healthy, and even blooming, in rooms of which the air is more highly heated with steam-pipes.

Among the many causes assigned by pathologists for the infirm health of persons who confine themselves much to warm apartments, and seldom venture into the open air, one of the most operative has been altogether overlooked — the rarefaction, by diminished pressure and heat, of the atmosphere which they breathe.* I find, if a differential barometer, containing proof spirit in the one leg, and oil in the other, have its horizontal tube thrust into the key-hole of a snug winter parlour, that, on turning the stopcock attached to it, the junction line of the two liquids will rise from half an inch to an inch, according to the tightness of the room, and the force of the fire. By opening the street door a further rise will take place. The pulmonary and sanguiferous systems being, in such circumstances, deprived of their due proportion of chemical aliment and physical support, must languish, and spread exhaustion over the nervous, muscular, and digestive functions. I am persuaded that many of the valetudinarian ailments of the opulent inhabitants of the United Kingdom may be traced to their breathing an air unduly rarefied by chimney draughts. Every well-constructed mansion should have its underground storehouse of temperature, from which a constant supply of genial air could be poured into the several apartments in such quantities as are wanted for comfort, with the effect of increasing rather than diminishing its density. Open fires would, in this case, be used only for enlivening the scene; and, being supplied with abundance of air from the ventilating orifices, could create no appreciable rarefaction.

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* Since the first portion of this paper was put to press, my attention has been called to a memoir of M. Junot, lately published in Paris, concerning the effects of compressed and rarefied air upon the human body. When a person is plunged in condensed air, he breathes with "a new facility;" he feels as if the capacity of his lungs were enlarged; his respirations become ample, and less frequent; at the end of fifteen minutes, he experiences an agreeable warmth in his chest, as if the pulmonary cellules, long strangers to the contact of air, were dilated anew to receive the genial spirit; while the whole animal economy sucks in at each inspiration a fresh supply of life and vigour.

The arterial system acts with increased force, while the veins in the surface of the body are depleted, and may be made even to disappear. The functions of the brain are excited, the imagination becomes lively, and the thoughts are "accompanied with a peculiar charm." The movements of the muscular system are rendered, at the same time, freer and more energetic. Digestion becomes more active, but without thirst (*la soif est nulle*); because the secretory system participates in the increased vigour of the arterial.

In rarefied air, the effects are nearly the reverse of the above: the breathing is constrained, feeble, frequent, ending in dyspnœa, or an asthmatic paroxysm; the pulse is quick, and easily compressed; hæmorrhages often occur, with a tendency to fainting; at length, a defect of vital energy, or apathy, supervenes. The kidneys and salivary glands cease to secrete their respective fluids. M. Junot proceeds to describe the effects of compressed and rarefied air upon different parts of the human body, both in a state of health, and in the cure of diseases, by means of a very ingenious mechanical invention; for an account of which however, I must refer to the memoir itself, in the *Archives Générales de Médecine*, seconde série, tom. ix. p. 157.

ART. II. *On the Perspective Plane.* By A. EDMOND, M. A.

IF you think the following remarks on the perspective plane any way useful in settling the opinion of any doubting reader, you will, perhaps, give them a place in your journal.

The problem proposed, in perspective, is: — to determine, and thence to delineate, the apparent form of an object, the object and position of the eye being given; or, to find a plane figure which shall appear to the eye of the same form as the given object.

Without stopping to observe the comparative merits of these definitions of the science, but adopting the usual postulates, I proceed to remark, that, as an object may be conceived to consist of visible points, so the apparent form may be taken to be composed of their apparent positions. We assume that a point is visible by means of a ray proceeding from it; and, setting aside the consideration of the quantity and quality of the light of that ray, all we know of the apparent position of the point is, that it lies in that ray; so that any point in the ray may be taken as the apparent position sought. Hence the apparent form, being an aggregate of the apparent positions, lies also in the rays, its points being any where in them. Hence, if the points are assumed all in one plane, we shall have, constituted by them, a plane figure for the apparent form of the given object in that given position.

If, then, a cone of rays proceeding from every visible point of an object, and from its surrounding ground and sky, be cut by any transverse plane, the section will exhibit the determined apparent form, and thence the delineation. But every object, except a sphere, has various apparent forms, according to the varying position of the eye; therefore, the delineation just found will have various forms, according to the position in which it is submitted to the eye; and there is but *one* position in which it can answer the end "of appearing to the eye of the same form as the given object appeared."

This *one* position is, when the eye is put in its original posia vertical plane, will, no doubt, be a true representation; but it will, most likely, be falsely looked at: and that, too, will probably be the fate of all views according to that system, whenever the axis of the cone is not horizontal; i. e. when the point of sight is not in the centre of the picture, where it always is in the right plane system, whether that point be defined the centre of vision, or the site of a perpendicular from the eye to the perspective plane. For the world place the centre of the picture opposite the eye whenever they view it, and have the placing of it; and, when they have not, they naturally make the centre of the picture the centre of vision. To this, the advocate of the vertical plane may reply, that neither will the world detect the proper distance of the apex, when even it is to be found at the level of the eye; but, besides that this is an objection as applicable to the one as to the other plane, and does not remove the former objection, it may be prevented by marking on each picture the proper distance at which it ought to be viewed; or making the cone constant for all pictures. An angle of 19° in the apex gives a distance of three times the diameter of the field of view; an angle of 29° gives a double distance; and 53°, an equal distance.

Lastly, the architect may allege that the rules for the vertical system are either more familiar to him, or more convenient for all the ordinary purposes of his practice, even without putting the eye opposite the centre; for if the distance, when optional, is made of large proportion, the difference between the two representations will almost disappear, and approximation is frequently all that can be obtained in this and other arts. To this it may be in part replied, that long distances are prejudicial to accuracy of detail in certain parts; and that, granting it to be a very close approximation to the right plane, still that ought not to exclude its adoption, especially if its rules are not more complicated than those of the other; and, while science must give it the palm, the artist, in particular, ought to study its effects, as it is the undoubted instructive rule for his eye.

But, while we must confess the decided superiority of the right plane over the vertical, in a scientific point of view, it is quite erroneous to suppose that the principles and rules of the vertical system are false; and, though other systems, and this also, may have defects or disadvantages, it would not invalidate them, even if we could show the right plane to be the only true plane, which, perhaps, is tantamount to calling it the natural plane. Now, there is no proof that there is in nature any plane at all, nor any surface, nor any impress on the pupil, nor any filmy cast of the objects, of infinite contractility, launched incessantly at the eye; but there is proof that an image is formed on the retina, and with that the judgment deals. But, if it could be shown that nature does or must adopt a plane, we may safely prejudge that this is the one; for, direct your hollow cone from the earth to a balloon in the zenith, or from the balloon to the earth directly below it, and in either case a vertical plane of delineation is impossible. What plane must we then adopt, or what has a preferable claim to the right plane, which will be found constant, and, therefore, the best entitled to be called the natural plane?

Mr. Parsey, the happy author of this improvement in the art of perspective, has, however, in drawing the cube, in his treatise entitled *Perspective Rectified*, compromised the strict rules of the plane, by granting students the license of reducing the apparent heights, in certain cases, without insisting on the convergence of parallel vertical lines. Now, if the reduction is adopted without the convergence, the picture will be distorted; and, accordingly, the picture of a square, seen by an eye opposite any point of the vertical line which bisects it, except the middle, is not a rectangle, as there given, but a trapezoid. Mr. Parsey is, however, aware of the convergence, but has not sufficiently urged the importance of it; for it may be shown that, wherever the eye is not beyond the level of the upper or under boundary of the object, there is a greater portion of convergence than reduction.

It was, perhaps, the omission of this particular that brought on him the imputation of error in principle, from some opponent, who, perhaps, imagining that he meant to set up the chord instead of the tangent of the visual angle of elevation, without making a corresponding change on the chord of the visual angle that lies in an oblique plane, rejected the proposal without farther examination. He, however, has not pointed out how the convergence is to be obtained. It may be done, with great readiness, from the lateral plane put in juxtaposition with the ground plan, and drawing through the second extremity of the sloping perspective plane a line parallel to that drawn throughout the first extremity, constituting the sky line or ground line, as the case may be, which parallel will be duly cut by the horizontal rays proceeding from the various sites of the perpendiculars on the ground plan.

The introduction of the lateral section is also due to Mr. Parsey: it is like a gauging plane or brazen meridian, to furnish the latitudes of all points appearing above the equator, or horizon, or ground line; while the ground-plan exhibits the longitudes, or distances east or west, right or left, of the prime meridian; every point of the apparent form being thus determined by its latitude and longitude on the picture, and having an imaginary parallel of latitude and an imaginary meridian, and the meridians converging when the eye is not level with the centre of the object. This supersedes all vanishing points but one, viz. the place of the eye; and, as that is at the least distance from the perspective plane, it greatly economises room, and may be attended with other advantages, which practice will readily discover. A word on finding the centre of the picture: — If the cone, which we imagine to be used in taking the view, be made exactly to circumscribe the edges of the square front, in the example formerly alluded to, the picture is a trapezoid, and the point of sight would not be justly found by Mr. Parsey's double bisection; but, if the cone be made to give the same apparent depth of sky as there is of ground, the sky and ground lines being equally distant from the circumference, and therefore from the centre, then the cone does more than contain the trapezoidal form of the square; but the centre of the picture, or point of sight, is then truly found by doubly bisecting the form of the building. Hence it is not right to add ground and sky at option.

I had proposed to calculate the exact reduction and convergence in certain given cases; but a carefully constructed diagram will satisfy the scientific as well as the practical man when to adopt, or when to disregard, with safety, the right plane.

One remark will conclude the subject; and it is, that this plane has its defects as well as all others; for, suppose we are drawing the front of a building 30 ft. or 40 ft. high, the door 8 ft. high, and 4 ft. wide, and the eye on a level with the top of the door; the picture, while the eye is fastened on the centre of the whole, will show no distortion; but let it examine the door singly, as exhibited on it, it will be found that, while the width is, by the scale, 4 ft., the height is more than 8 ft. Now, this objection is not applicable to the vertical plane, when the picture is properly viewed; and the consideration of it suggests to us, that the only true and perfect perspective surface is that of a concave sphere. This we have previously inferred, when remarking on the suitableness of a dome for the exhibition of pictures. Perhaps the panoramic views are the nearest approach to this that we can practically obtain, combining in them the concave and the vertical surface. Card-board might be moulded in the form of a spherical segment, and transparencies might be painted on glass segments; but we leave to the curious to estimate their advantages and disadvantages, either by discussion or trial. We find this spherical surface forced upon our uninformed judgments in the case of the heavenly bodies; which, the quantity and quality of the light not being easily cognizable, being left to be allotted by us to whatever position we may, are looked upon by us as equidistant, that is, as points on a spherical surface.

Description of the Illustrations which accompany the foregoing Article.

Fig. 23. *a b c d* represents the square front of a building, or the opening of a street; *g h*, the middle vertical line; *i l*, a per-

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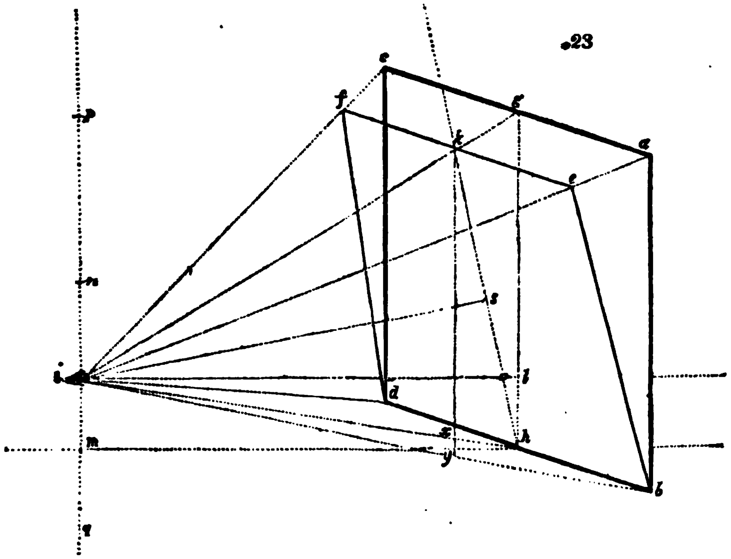

pendicular ray to the plane *c b*: visual rays are drawn from the principal points, the superfluous ones of the cone being rejected for the present; *i k* is made equal to *i h*, and *e f b d* is the trapezoidal image; *a c* or *b d* becoming *e f*, while *g h* becomes *k h*.

Now, *k h* is not proportionally so much reduced from *g h* as *e f* is from *a c*; for *a c* is to *e f*, as *g i* is to *k i*, or as *g h* is to *k x*. Therefore, if the ratio had been equal, *g h* would have been reduced to *k x*; but *k x* is less than *k y*; and *k y* is less than the hypotenuse *k h*. The inclination of the plane is less than half the visual angle subtended by *h g*.

If *i* were at *n*, opposite half the height of *g h*, then there is neither reduction nor convergence, and the planes coincide.

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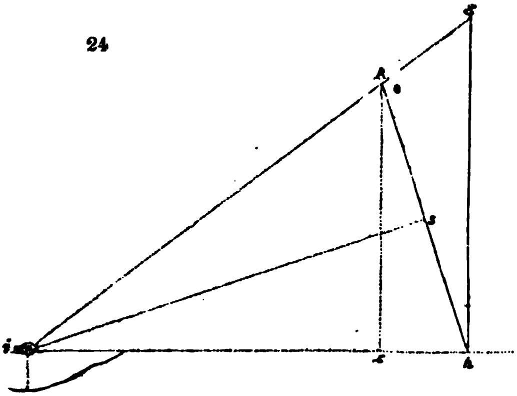

If *i* be in *m* or in *p* (*fig.* 24.), *k h* is again greater than *k x*; and observe the inclination of the planes, viz. the angle *g h k*, or its equal, *h k x*, equals half the visual angle subtended by *g h*.

If *i* rise above *p*, or fall below *m* (*fig.* 25.), the ratio

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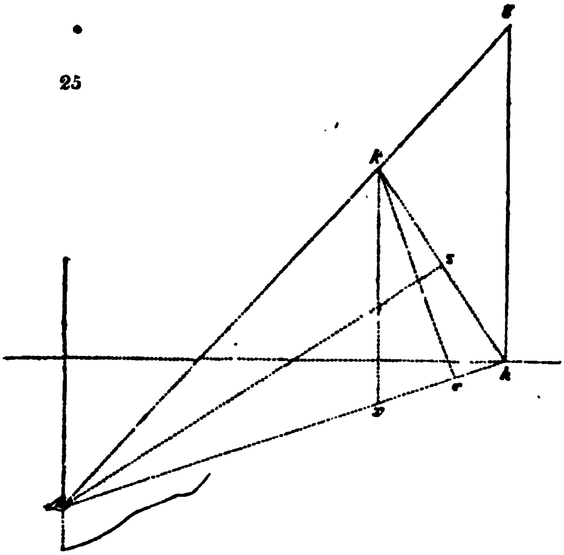

of convergence will be greater, as before, or equal to or less than that of reduction, according as *k h* is, as before, greater than *k x*, or equal to or less than it; and that will happen if the inclination of the planes be less, equal, or greater, than the whole of the visual angle under *g h*. For, let *k r* be at right angles to *i h*, then *h k r* is half the visual angle; and if *k h* equals *k x*, then *r k x* will equal *h k r*, and the whole *h k x* will equal the visual angle, or, by parallel lines, the inclination of the planes, viz. *g h k*. But, if *k h* be less than *k x*, then *r k x* is greater than *r k h*; therefore *h k x*, and also *g h k*, greater than *g i h*, &c.

Now, this convergence was to be effected, in drawing, by means of the vanishing point of the lines *a b*, *g h*, *c d* (*fig.* 23.), which point is at *v*, beyond the limit of the page, *i v* being parallel to *h g*, and meeting the plane *h k* in *v*. Had it been the vertical plane we were using, then *i v* would never meet it; that is, *c d* and *a b* would be drawn parallel. But here *s v*, the distance of the vanishing point from the point of sight, is to *s i*, as *s i* is to *o s*; a very inconvenient quantity, especially when lateral vanishing points require also to be introduced. Hence, the advantage of the sky and ground lines; and their mutual relation is shown in *fig.* 26.: they change places when *i* is as much above the half height of the cube as it is now below it; their sections are respectively transferred by the parallel ruler, or by marks on the straight edge of a slip of paper laid along them; and the latitudes of their sites and summits set off on the medial ray, or prime vertical, of the picture, through which parallels are

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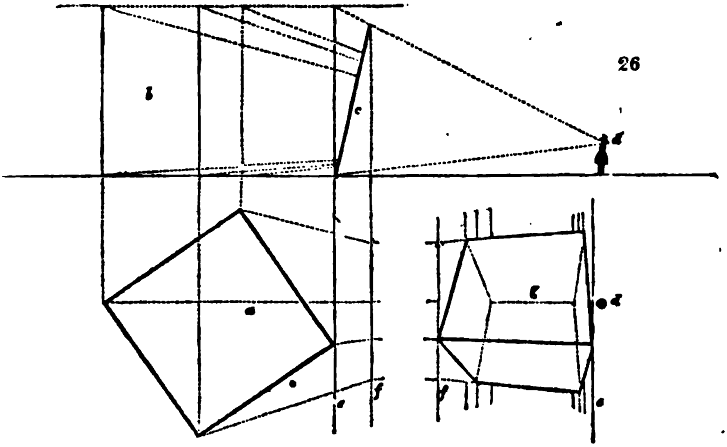

next drawn. In the engraving *fig.* 26., illustrative of these remarks, *a* is the ground plan; *b*, vertical plan; *c*, plane equalising the rays; *d*, station point; *e*, ground line; *f*, sky line; and, when the diagram is turned round, *g* is the true perspective view of the object.

Figs. 27. and 28. show the modes in which the apparent form may be encompassed by the cone, the latter being that to which this system is accommodated.

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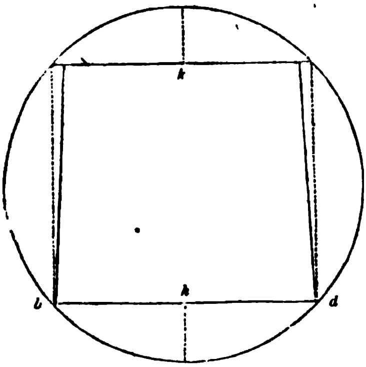

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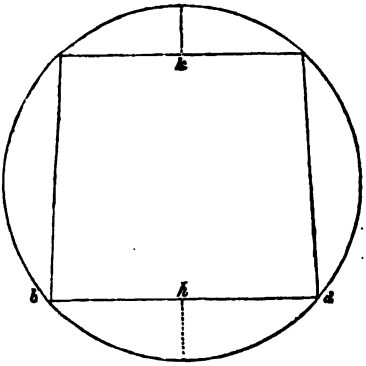

Fig 23. shows that the door *l h* is represented by *h o*, a larger quantity; while the breadth is the same as by the scale.

33. *Hill Street*, *Peckham*, *Oct.* 1836.

ART. III. *Candidus's Note-Book.*

Fasciculus V.

"Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis."

I. CRITICISM is so frequently little more than a retailing of ready-made opinions, that it is quite refreshing now and then to meet with a remark which sets any such opinion in a novel point of view, and which may lead us to examine it more cautiously and narrowly than we have been wont to do. On this account, what Prince Puckler Muskau says, in one of his recent publications, on the subject of St. Peter's at Rome, merits, at least, to be taken into consideration. "If Bramante (or Michael Angelo) really said, 'You are struck by the Pantheon, as it stands upon the ground; but I will elevate it in the air;' he merely uttered, as others besides him have done, an expression that strikes at first, and takes the hearer by surprise; yet, when it comes to be examined, will be found not to bear scrutinising. Let us suppose any one to say, 'The pyramids are wonders, even on the earth; but I will raise them above the clouds;' and that he were actually to carry his vaunt into effect, by erecting a similar structure on the summit of either the Chimborasso or Mont Blanc, where such an immense mass would appear no more than a sentry-box: however much we might be astonished at such an achievement, we should be forced to confess, that the pyramids are infinitely more imposing to the eye in their present situation than they would be if elevated into the region of clouds. The cruciform plan of St. Peter's, a form so unfavourable for architecture; the vast multitude of pillars, vaultings, chapels, niches, altars, and monuments, all, for the most part, overloaded with innumerable badly designed and badly executed ornaments; consisting of arabesques, zigzag flourishings, symbols, and coats of arms, or of bas-reliefs, doves, angels, and popes, together with saints and patriarchs of all dimensions,—all this constitutes such a cut-up and confused *ensemble*, that it is impossible it should impress the beholder with that feeling of unity and grandeur as does the first view of the Pantheon, in a manner perfectly irresistible. The lavish profusion of ornament, and the modern appearance the church derives from it, combined with its prodigious size, frequently lead those who are astonished by it to exclaim, in a tone of enthusiasm, that it is as sublime as it is elegant! Yet, if we ask ourselves what is meant by elegant sublimity, or sublime elegance, we are tempted to regard such compliment as nothing else than a sarcastic epigram."

II. Although I am disposed to agree with Puckler Muskau in the general scope of the above strictures on St. Peter's, I do not exactly hold with him, that a cruciform plan is objectionable in itself; so far from it, that I consider it highly favourable to architectural effect; though that effect will, of course, very much depend upon a variety of concomitant circumstances, which may tend either to enhance or to impair it. It has been objected, that the dome of St. Peter's does not strike the spectator by any means in the degree it would do, did it display itself to the spectator immediately on his entering the building. Undoubtedly, the effect is not so sudden as it would be in the latter case; yet that would not amount to a serious objection, were the effect to proceed *crescendo*, till it attained a full climax: the more forcible objection is, that the character which is so impressive in the Pantheon, is lost, even beneath the dome itself, and one altogether different substituted for it. We are not within, but *beneath*, a rotunda, elevated far above us, and to be viewed only by looking directly upwards; for in the lower space, where the spectator actually stands, all circularity of plan is entirely lost sight of. There is prodigious, not to say extravagant, altitude; but, then, it is such as to counteract the other dimensions, and to detract from the importance of all the rest; whereas in the Pantheon, whose height does not exceed its diameter, the amplitude manifests itself to the eye at once, instead of requiring to be computed and summed up after the several parts have been examined in succession. Another circumstance to which the Pantheon is greatly indebted for much of its grandeur is, the fine effect of light, which is admitted through a single large aperture in the dome, and, consequently, produces great breadth of chiaro-scuro. In St. Peter's, on the contrary, the dome is chiefly lighted by lateral windows in its tambour, which altogether alters the character. The same remark applies to our own St. Paul's, which is still more faulty in this respect; the cupola being, I will not say utter darkness, but mere palpable gloom and obscurity, compared with the rest of the interior, amid which may just be discerned a small twinkling of light in the upper lantern.

III. The mention of St. Paul's leads me to bestow a little *note of admiration* on the exceedingly ingenious view of the dome from the Whispering Gallery, just come out in a new publication. By a most happy *strabismus* of perspective,—there being two points of sight, one of which, I presume, is intended for the right, the other for the left, eye, we are enabled to look down on the pavement below, and upwards into the lantern, at the very same instant! This is capital; second to nothing but the view of the choir, in another print by the same artist, where the sun is shining both on the south and the north wall, and also on the vaulted roof! Similar felicity of *invention* is displayed in one of the external views, where all the surrounding houses are removed to a most respectful distance from the cathedral, leaving it in solitary dignity in the centre of an area ten times the extent of the real one. This, most assuredly, *non è vero;* yet it is impossible to add that it is *ben trovato.* There are very many other people besides Sir Edward Walpole who learn drawing without perspective.

IV. A word is put in in favour of amateurs in the article on Architecture in the last Number of the *Quarterly;* where, after observing that architects, however much they may dispute on other points, all agree in protesting against amateur judges, the writer observes, "If architecture aspires beyond the mere exercise of a trade, to rank with those finer arts whose predominant merit is the influence they possess over the feelings and imagination of man, its highest pretensions must, like those of its sister arts, be subject to general laws, and its best prize of admiration be awarded by an unprofessional tribunal." He then goes on to support this view of the matter by the parallel case of poetry; in which a person may be an excellent critic, although no poet; clenching his argument by Johnson's observation: "A man may complain of a bad chair or table, who never made either in his life. It is not his trade to make tables."

Afterwards, however, the writer gives amateur architects a rap; telling us of one "who had designed himself one of the prettiest houses imaginable, and was proceeding with the utmost satisfaction, till a stonemason reminded him that he had *forgotten the staircase;*" which, although here attributed to a personal friend of the writer's, is a tolerably ancient joke. After all, too, it tells nothing against amateur architects, further than that the one in question committed an egregious blunder; a blunder, too, of such nature, so palpable and gross, as to be one which the slightest consideration would guard against, and, therefore, not be likely to be committed by any one else. If an instance of that kind is to be held up *in terrorem,* a person ought not to venture to do anything whatever that he does not do professionally. The blunder arose, not from the gentleman's being an amateur, but from his ignorance, or rather sheer thoughtlessness, of what he was about; for an amateur, no more than any one else, can be expected to succeed, unless he will be at the pains of preparing himself by previous study. If the inference obviously intended to be drawn from the anecdote, owing to the way in which it is told, be a correct one, Lord Burlington, towards whom, by the by, the reviewer is not a little complimentary, ought to have shown himself a mere dabbler in architecture, when he pushed his amateurship so far as to tread upon the very heels of the profession, nay, to get ahead of most of those in it, at that day. Unless they will take the trouble to educate themselves for it, people cannot even be judges of what is good or bad, either in architecture or any other of the fine arts, and must, consequently, be incompetent to sit in "an unprofessional tribunal."

V. For one who would commit such an egregious oversight as that of forgetting to provide a staircase, there are a hundred professional, no less than unprofessional, men who overlook what is highly important in a plan, and which requires to be maturely considered at the very outset, because of that nature, that no friendly "stone-mason" will be likely to perceive and point out the omission. The man who, in planning a house, can suffer such a thing as a staircase, or any other equally indispensable part, to escape his notice, would be apt to forget an ear or a nose were he drawing a face. Consequently, the hit aimed at amateurs by such instances quite overshoots its mark, and is *telum imbelle et sine viribus ictus.*

VI. The newspapers, again, inform us that the king intends to take possession of the New Palace some time in the course of May, but that the levees and drawingrooms will continue to be held at that of St. James's. Are we to infer from this that, after all it has cost, the new building turns out to be so defective in accommodation, no less than in taste, as to be unsuited to those occasions of state ceremonial which ought not to be lost sight of in planning a royal palace? Yet that it is especially calculated for the parade of levees and drawingrooms, cannot be asserted, there being only one, and that a very moderate-sized, staircase for company; and, although hoops are now gone out of fashion, even at court, such an approach would be exceedingly inconvenient where two tides of visitors, the one ascending, the other descending, would encounter each other just on the narrow upper landing of the double flight of stairs. Perhaps the report itself is without foundation, for it has generally found its way into the newspapers, every spring, for the last three or four years.

VII. It admits of question, whether the scheme of inviting foreign architects to enter into competition, which has been adopted for the Exchange proposed to be built at Hamburg, will not furnish a somewhat dangerous precedent, should we ourselves ever think proper to follow it. Of course, it remains for our English architects to show how far they approve or disapprove of such principle, by accepting or declining the invitation thus held out to them; but, should any choose to avail themselves of it, they could not justly complain, were they afterwards to find that similar liberality on the part of this country operated against themselves, and that they had to compete with some of the most able foreign architects. One beneficial consequence, indeed, likely to ensue from such widely extended competition would be, that it could hardly fail to prove a death-blow to that system of jobbery and favouritism which has so long prevailed, and which renders talent of very secondary influence when opposed to interest.

VIII. Those who have not quite forgotten their Phædrus may, perhaps, recollect the fable of the man who was made quite bald by one lady plucking all the grey, and the other all the black, hairs from his head. It is after such fashion that Hamilton and Welby Pugin (that "præterpluperfect Goth," as the *Quarterly* styles him) would pluck us quite bare; the former weeding out all that is Gothic, the latter all that is Grecian, in our architecture; so that, between them both, we should be reduced to the Marylebone school of design again, till such time as we could invent some style that should be altogether new.

IX. Particularly annoying is it to me to meet with a long newspaper account of the ceremony of laying the first stone of a building, where, although such matter of course things as the "silver trowel," &c., not forgetting the usual dinner afterwards, are gravely mentioned, seldom a hint is dropped as to what the building itself is to be, or even the name-of-the architect mentioned, unless, indeed, the account happens to be furnished by the architect himself. I am of opinion that what Goethe says on the subject of nuptial entertainments and rejoicings holds equally good in respect to ceremonies of the other kind; and that it would be better to postpone congratulation until we see what the splendid structure really turns out. At least, let us have some description given on such occasions, from which we might form some idea of the edifice itself.

REVIEWS.

Art. I. *Report from the Select Committee on Metropolis Improvements; with the Minutes of Evidence and Appendix.*

Although the plans accompanying this Report, amounting to the number of fifteen, are so indispensable, that, without them, we can do little more than barely enumerate the different lines of new streets, and other improvements contemplated or suggested for various districts of the metropolis, we cannot pass by so very important and interesting a parliamentary document, without at least calling the attention of our readers to it.

The following query (No. 124.), put to Mr. Routh, will suffice to give at once a brief summary of the different plans here brought forward:—"Have you seen the statement of intended improvements which has been put in in evidence; one, a new street from the Mansion House to Southwark Bridge; a street long contemplated from Farringdon Street to Clerkenwell; completion of a street from Waterloo Bridge (which has been carried into effect as far as Bow Street) to Gower Street; the improvement of the street from Lothbury to the Post-Office; from Finsbury Square to Spitalfields, and into Whitechapel; from St. Catherine's Docks to London Bridge, by extending Tower Street, in connexion with Eastcheap; from High Street, Southwark, to run several streets across to the Bridges; from Waterloo to Westminster Bridge on the south; a new street from Westminster Abbey to Belgrave Square; the removal of Middle Row, Holborn; a new street from Holborn to Oxford Street; a new street from Holborn to the Strand; to widen the Poultry; a new street from the Post-Office to Smithfield and to Holborn; a new street from St. Paul's to Blackfriars' Bridge; to widen Thames Street; to widen Holywell Street; the Post-Office to be thrown open to Cheapside; to purchase Waterloo and Southwark Bridges; to make a street from the Haymarket to King William Street, Long Acre? Is it your opinion that it would be highly beneficial to the public to have those streets made?—Decidedly."

To which "decidedly" we add our *ditto;* for that most of these alterations are imperatively called for, will be apparent, we think, to any one who will be at the trouble of examining any map of London. Very much, indeed, has been done, of late years, in improving and opening both the western and eastern extremities of the metropolis; but, with the exception of the two main lines formed by Holborn on the north, and the Strand and Fleet Street on the south, the whole of the intervening space is very badly planned, if planned it can be said to be at all; and there is a very great want indeed of some good lines of communication running from north to south, such as would be formed by continuing Farringdon Street as above proposed, and by connecting Gower Street with Bow Street. That a new street from Oxford Street into Holborn, joining the latter at what is now the narrow entrance into Plumtree-Street, would be exceedingly desirable, although, as a communication, not quite so much called for as some of the other projected plans, will hardly be denied, when it is considered how highly beneficial such alteration would prove, not to the immediate neighbourhood alone, but to the whole of that part of the metropolis, by cutting through and removing the whole of that mass of wretchedness known by the name of the "Rookery." The account given in evidence, both as to the horrible loathsomeness of the habitations, and of the brutality of the population who harbour there, is actually appalling and sickening: to such a degree, in fact, that those who form their ideas of London from Regent Street and the Parks, must imagine the whole to be a piece of fiction—a description of some *terra incognita,* peopled by savages. Neither are many parts in the vicinity of Waterloo Bridge at all better, according to Mr. Cottingham's evidence, except that they are less filthy.

"As regards the tolls upon Waterloo Bridge," says that gentleman, "I am of opinion, that the opening of that bridge would be one of the greatest possible benefits to the parish of Lambeth, and particularly in a moral point of view. The depraved, debased, and infamous state we are in, in the direct line of the Waterloo Bridge Road, surpasses anything that ever existed in this great metropolis. Such is the state now of prostitution, and of thieves and vagabonds of every description, on that side of the water, that property, within the last five years, has decreased in value at least 35 per cent: houses which I let, in the Waterloo Bridge Road, six years ago, at 65*l.* a year, are now standing empty at 40*l.* a year; and I consider this, in a great measure, to arise from all the streets and communications, both in the road and out of the road, being inhabited by common prostitutes and thieves of the lowest and worst description; and I am of opinion, that, if the toll were taken off that bridge, the influx of people into the parish of Lambeth would be more than 200 per cent greater than it now is, and would be the great means of removing those intolerable nuisances occasioned by common brothels. There are whole streets that communicate with Waterloo Bridge Road entirely inhabited as common brothels"!

This is indeed a most deplorable picture, almost sufficient to deter any one from joining in the first "influx" into so abominably depraved a district. Yet such is likely to be invariably more or less the case, when, for want of streets adapted to tradesmen and other reputable occupants, entire districts are abandoned to poverty and vice, huddled up together; the one removed beyond the sphere of aid and sympathy, the other beyond that of check and control; whereby the evils almost inseparable from a vast and densely populated city are augmented in a most lamentable degree. Independently, therefore, of increased facility of communication, whatever tends to cut through such pestilential neighbourhoods, to carry improvement into the heart of them, and to distribute among them a class of inhabitants who, being in no danger of being corrupted by them themselves, would gradually help to civilise them, ought to be hailed as an improvement of the most praiseworthy description.

Yet, although no one (none of our readers, at least) will question the utility and desirableness of the projected plans, many will very naturally ask by what means such various and very extensive improvements are to be carried into effect; for neither are old houses pulled down, nor new streets built up, quite so expeditiously and cheaply in reality as they are upon paper. The reply is furnished by the Report, which informs us that two modes of raising the money required have been brought under the consideration of the Committee: 1st, by an additional duty of 6*d.* per ton upon coal imported into the port of London; which, it is calculated, would produce somewhat more than 53,000*l.* per annum; 2dly, by raising a sum of money annually by lotteries; by which, it appears, from 100,000*l.* to 200,000*l.* per annum might be raised; while it is stated, that the revival of lotteries for such purposes would be in itself a public benefit; inasmuch as it would keep in this country the money now embarked in foreign lotteries, and also tend to injure those fraudulent lotteries known by the name of "little-goes."

The plans would afford matter for much longer comment than we can now enter upon; we shall therefore content ourselves with observing, that those which promise to conduce most to effect, without taking into account the other architectural improvements they would give rise to, are, that for the street from Pimlico and Belgrave Square to Westminster Abbey, where the west front of that building, cleared of its present excrescences, would display itself at the termination of the vista; the street from St. Paul's to Bridge Street, coming out at the corner of Earl Street, which would afford another view of the front of the cathedral; and thirdly, the street from Newgate Street carried in a straight line to the portico of the Post-Office. This last-mentioned street would run parallel with, and close by, the hall of Christ Church Hospital, which stands obliquely to Newgate Street; but then it cannot be carried into effect without taking down nearly the whole of the lately erected building belonging to the hospital, and forming the east side of the court in front of the hall; so that we apprehend this improvement, at least, is not very likely to take place. H. C.

We have been informed, on what we consider undoubted authority, that some of the best plans sent in to this Committee are not published in the *Report;* instead of which certain others are given, which, if carried into execution, would prove more costly, and less beneficial to the public, though calculated to increase the value of property in particular localities. We think it right that the public should be put on their guard against manœuvres of this kind. As to taxing coal, or countenancing lotteries, for carrying the proposed improvements into execution, we think both sources of income radically bad. The proprietors of ground ought alone to be taxed for such improvements, because it is they who will chiefly benefit by them.—*Cond.*

ART. II. *Observations on a Letter from W. R. Hamilton, Esq., to the Earl of Elgin, on the new Houses of Parliament.* By Colonel J. R. Jackson. 8vo, pp. 46. London.

THIS pamphlet has the merit of being written with great moderation; but there is nothing in it either new, or presented in a very forcible manner. The author admits the beautiful simplicity of Grecian art, but prefers the Gothic for the houses of Parliament, from the early associations connected with that style. The following quotation not only contains the essence of all that is said in 46 pages, but gives an exceedingly good idea of the character of the writer's mind:

> "The Gothic is eminently English in every respect: by its early adoption and very general use for ages, and by its having been brought to the greatest perfection in this country. It is the architecture of our history and our romance. Our kings of old held court in Gothic structures. In buildings of a similar character our British barons held their lordly revels, or, in times of feudal warfare, aided by their kinsmen and valiant vassals, withstood the assaults of rival chiefs. In Gothic halls, our ancestors met in council to frame laws, and weigh affairs of state. The seat of every great event of England's olden time is connected, in some way or other, with the pointed arch; and, as I have said, our very romance is of Gothic connexion.
>
> "Murders, ghosts, midnight noises, banditti, persecuted damsels, high-born dames, and gentle pages, knights, and squires, and all the tales of wonder that charmed us in our early youth, are connected in our minds with Gothic vaults, and keeps, and watch-towers, and dungeons, and subterranean passages, and oriel windows, and latticed casements; and, though certainly no reason this of itself to warrant a preference of Gothic architecture for a House of Parliament, it goes to prove that we are intimate with Gothic forms, and that they constitute in our minds very positively, though perhaps unconsciously, a connecting link in that great chain of associations which bind us still more closely to our country. Gothic forms are like old friends: we love them rather in consequence of our long intimacy, than for their beauty; though pure Gothic has striking beauties. Thus, then, it appears to me, that a patriotic, which is little less than a religious, feeling, is intimately connected with our determinations regarding the style of architecture of the Houses of Parliament; and that the Gothic style, being, for many reasons, peculiarly familiar to us, is more national than any other; and, in consequence, the most appropriate for the building in question; and, further, that this being the style of by-gone times, so far from being any disparagement, is, on the contrary, an additional reason for its exclusive adoption. We should religiously cherish the recollections of, and nourish a warm feeling for, every thing which brings to mind the time when England had virtues to be proud of, though steam and railroads were unknown."

ART. III. *A Complete Scientific and Popular Treatise upon Perspective, with the Theories of Reflection and Shadows; illustrated with twenty-four plates.* By a Pupil of Mons. J. P. Thénot. London, Simpkin and Marshall

NOTWITHSTANDING the frequent remarks, that "science is on the decline in England," and that "perspective has not been so popular here as on the Continent, nor has it kept pace with our general progress in intellectual improvement," the many works which have appeared in this country, within the last few years, on the branch of science on which the above work treats, go far towards establishing a contrary inference with regard to the individual subject in question; as the circumstance of these works being encouraged by the public, shows that a taste for perspective is on the advance.

To the scientific reader it is unnecessary to point out the utility of perspective; and to the general reader it must also be evident that this science does not merely afford assistance to the artist, but that, without a knowledge of it, he cannot advance one step beyond the rude essays of uncivilised life. Indeed, a knowledge of perspective is so essential to the cultivation of a system of true delineation, that it may be considered as the foundation of the pictorial art; while historical and landscape painting are indebted to it for those graphic illusions, and pleasing associations, which have tended so much to refine and embellish society.

The present volume commences with a well-written preface, in which we are told, that "the work is one of those destined for the instruction of the mass; and, with a view to fit it to this purpose, the method through which the information has been imparted has been simplified as much as is compatible with the subject." The work fully supports these remarks; for the principles of perspective are so clearly demonstrated, and practically applied in so popular a manner, that they may be understood by any one unacquainted with geometry, by merely attending to a few definitions, and a few elementary diagrams, which are of necessity given.

The subject of perspective is commenced by fully explaining what the author calls the "rational horizon;" which horizon it is essential that the learner should perfectly understand at the very commencement of his studies. It might be wished that, at this point of the course of perspective, the *plane* of projection had also been fully explained; that is, that a sectional diagram had been given, showing the relative positions of the eye, the picture, and the objects viewed; which would have been more explanatory to beginners than placing the point of distance on the horizontal line.

It has been said, that the plane of projection, or the picture, is nothing more than nature seen through a window; and that, if the student draws on the glass the objects seen through it, the objects thus drawn would be in perfect perspective. Now, this remark requires to be qualified; because they would only be correct when the axis of the rays, or that of the central ray, was perpendicular to the glass, which would seldom be the case. The equalisation of the rays, however, the author has not considered; and, therefore, the sectional diagram before alluded to would show that, to obtain the true heights of objects, the plane, or picture, must cut the rays perpendicularly to their axis vertically as well as horizontally.

The work is followed up with directions for putting into perspective a number of familiar objects, such as buildings, figures, trees, furniture, &c., which are far preferable for the learner to mere geometrical figures. To extract any part of the work would not do the subject justice, as it forms a regular progressive course of perspective, the whole of which is equally comprehensive and instructive.

The instructions given for the representation of irregular figures, curved lines, circles, arcs, &c., are full and satisfactory: but there are other features in the work which deserve to be particularly noticed, as they are seldom found in books on this subject. These are, the simple instructions which the author has given with respect to working with a fraction of the distance, when the entire distance is without the picture; also the directions given for measuring all kinds of perspective lines, as well as the rules for placing figures on inclined planes in perspective. Indeed, this part of the work, as well as every other part, shows that the author is perfect master of his subject, according to the system he has adopted.

While, however, I thus bestow due praise on a work which deserves a place in the library of every one interested in perspective, it may be well to observe, that the present volume is more adapted to the historical, the landscape, and the decorative painter, than to the architect, engineer, and mechanic. In the first place, the different objects are put into perspective by lines drawn on the picture, instead of the various points being projected from a ground plan, as is generally done by architects, engineers, &c. This, however, is no defect, but a convenient mode for artists; while it would be, perhaps, the reverse for architectural and mechanical draughtsmen. The illustrations, also, are chiefly in parallel perspective, which is a mode of representation more particularly suited to the artist than the architect, &c.; and, consequently, the outline of surfaces parallel to the picture are represented geometrically; which, by the way, would only hold good when the eye was exactly opposite the centre of such surfaces. The parallel method is, of course, best adapted to the representation of a multitude of objects; but the architect and engineer, who are chiefly concerned with individual objects, choose more frequently the angular method, and, more particularly, with the objects placed in that position that the lines vanish to accidental points upon the horizon.

The instruction given in the work for this latter mode of representation is very limited. No publication has yet explained angular perspective more fully and satisfactorily, though technically and theoretically, than the works of the celebrated Peter Nicholson; which works are, however, bulky and costly volumes, the article on perspective being combined with other useful and instructive matter. These remarks, as before observed, together with a foregoing observation, that "the author is perfect master of his subject according to the system he has adopted," are merely to show that, although the work would be useful to an architect, it would be more so to an artist. But the above quotation with respect to system is intended to have a farther meaning, which it may be necessary to explain.

In all the plates of this work there are objects placed on one side of the principal vanishing point in parallel perspective, while there are no objects on the other side. Now, the line from the eye to the vanishing point is the axis of the rays horizontally; and if this line, with the outside ray from the extremity of the object, form no greater angle than 30°, then the representation may be said to be correct, because the same number of degrees is allowed for the other side of the central ray; and, although there are no vertical objects on that side, the eye may be supposed to be looking on the ground; but, if the angle on either side of the central ray is more than 30°, the representation may be considered incorrect, because objects cannot be seen distinctly under a greater angle than that of 60°. Now, instead of placing objects on one side of the central ray, with one surface parallel to the picture, the general practice, or the practice that ought to be general, is (unless, indeed, the object can be seen under a very small angle), to draw the extreme rays from both sides of an object, equally divide the angle formed by the rays, and let the plane be placed perpendicular to the division line; then the object immediately assumes the angular position, and the boundary lines vanish to accidental points on the horizon.

While, in viewing a group of objects, the eye ought to rest near the centre of the mass; so, also, with individual objects, the eye ought to rest near the centre; but, in the cases above adverted to, that is, in the plates of the work before me, the eye looks straight forward in viewing an object placed a great deal to the right or to the left. If it were necessary to explain this point farther, it might be observed, that a person standing in a room, and wishing to view another person coming in at the door, would never think of fixing his eye on the wall some feet beyond the door's architrave: he would surely look at the object approaching.

After having fully exemplified the principles of perspective, and practically applied them to the representation of numerous objects of various forms and sizes, the author passes on to the subject of shadows in perspective. The principles of this subject he has fully and satisfactorily explained, and given judicious examples for finding the shadows thrown by objects, when the luminous body is placed in three different situations; namely, within the picture, out of the picture before the spectator, and out of the picture behind the spectator. The manner of throwing shadows in the architectural compositions in perspective, annually exhibited at the Royal Academy, shows that the theory of this branch of the art has not been so much studied by architectural draughtsmen as the projection of objects in perspective: but no one need be ignorant of the subject who is in possession of the present treatise.

The pages explanatory of shadows, as also those on the reflection or perspective repetition of objects in water and looking-glasses, together with the illustrative engravings to both, are not the least valuable parts of the work; but they must be read and examined to be appreciated.

There are a few typographical errors in the work, such as, p. 13, for "Fig. 24," read "Fig. 42;" p. 16, for "Let A C be the larger diameter," read "Let A B be," &c.; p. 43 (new par.), for "Fig. 69," read "Fig. 70;" p. 58 (end of 1st par.), for "A C, B E, are equal," read "A C, B C," &c.; insert Y, on the line U, in fig. 89, plate ix. In the Note in p. 91, for "*where* the edifice transparent," read "*were*," &c. Some of these mistakes are, however, in a book of this description, even with the greatest care, almost unavoidable.

In conclusion, the work is, on the whole, well got up; the demonstrations are clear and comprehensive; and, while the text is written in a popular manner, and divested of unnecessary technicalities, the plates are free from that confusion generally to be found in those of books of this description. There is no doubt, therefore, that the work will be well received by all those who, from pleasure or necessity, use the painting brush and drawing instruments, and have any desire to be able to delineate objects correctly. R.

Feb. 8. 1837.

ART. IV. *Literary Notices.*

A CONTINUATION of Pugin's Works on the Architecture of the Middle Ages, by Thomas Larkins Walker, Architect, Honorary Treasurer of the Architectural Society of London, is publishing in Parts, the Second of which will appear on the 1st of May next.

Temples, Ancient and Modern; or, Notes on Church Architecture, by William Bardwell, Architect, in one volume 8vo, will speedily appear.

A complete Analysis of the projected Railways in England and Wales, 1836-7, *for which Notices of Application to Parliament, in the ensuing Session, have been given, and the requisite Documents lodged with the several Clerks of the Peace, and in the Private Bill Office of the House of Commons*, by Francis Whishaw, Esq., Civil Engineer, M. Inst. C. E., is in the press.

The Gallery of Practical Science, First Division (*Mechanics of Fluids and Hydraulic Architecture*), is just published.

A Tabular Chronological Epitome of the History of Architecture in England, by George Godwin, jun., Architect, Associate of the Institute of British Architects, price 1*s*., is just published.

Railway Practice, by C. J. Bree, C. E., in one vol. 4to, with 40 or 50 plates, is nearly ready.

A Treatise on Artificial Foundations for Buildings, Railways, &c., by C. Davy, Arch. and C. E., in one vol. 8vo, illustrated with Cuts, will very shortly appear.

The professional Life and Works of the late Sir John Soane, by T. L. Donaldson, Hon. Sec. of the Inst. of Br. Archs., &c., is just published.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Origin of Gothic Architecture.— There has been a good deal of ingenious writing about the origin of Gothic arches. The interlacing of tall trees in an avenue, as it has something of the effect, has also been considered as the original model, of the interior of the Gothic cathedral, and what the earliest architects may have proposed to imitate. The origin is probably much less picturesque. The people of the north of Europe, before their conversion to Christianity, buried their dead, like all barbarous nations, with their arms and implements, and even their horses, slaves, and sometimes their wives. On the sea coast, the boat in which the chieftain sailed was laid over the body, and the tumulus was raised over its hull. This circumstance repeatedly occurs in the *Saga*; and the ship tumulus is distinguished by all Scandinavian antiquaries, as distinct from the round heaps, or mounds of earth, raised over stone coffins, or other receptacles. Its inside would be exactly a Gothic building in wood; and the main body, the nave (navis), is called the ship of the building in the ancient northern languages, probably in reference to this origin. (Laing's *Journal of a Residence in Norway.*)

Defacing public Buildings and other Objects.— In France and Italy, so strong is the admiration for public gardens, for statuary, and other works of art, that they may be exposed to the public for years together, without getting in the slightest degree defaced or destroyed; whereas in Great Britain every public edifice, monument, or iron railings, is more or less injured. If a gentleman, in the neighbourhood of a town, give the public the privilege of walking through his grounds, he may expect to find the borders trod upon, and flowers plucked up, perhaps by the root, his trees cut or torn down, and every thing more or less destroyed. In one of the public gardens in a town on the Continent, a nightingale built its nest and hatched its young inside a bush, within reach of the public walk. A footman, servant to an English family resident there, observing the nest, seized it and carried it off. So strong was the indignation of the populace, who caught the offender in the act, that he was brought before a magistrate, and condemned to be drummed out of the city, with a label on his breast, intimating his crime; which was executed amid the hootings of the populace. Whatever virtues the people of Great Britain possess, they have yet to learn the practical principle, " Look at every thing, and touch nothing." We know of nothing that will operate as a cure so powerfully as the establishment of schools for infant and juvenile training; and we appeal to facts in proof of this position. (Stow's *Training System.*)

Reasons why Arcs of Ellipses, or Circles, are pleasing to the Eye.— Professor Müller of Berlin has, in a late course of lectures, offered a simple and mechanical explanation of the universal admiration bestowed on these curves. The eye, he observes, is moved in its socket by six muscles, of which four are respectively employed to raise, epress, and turn to the right and to the left. The other two have an action contrary to one another, and roll the eye on its axis, or from the outside downward, and inside upward. On an object being presented to the eye for inspection, the first act is that of circumvision, or going round the boundary lines, so as to bring consecutively every individual portion of the circumference upon the most delicate and sensitive portion of the retina. Now, if figures, bounded by straight lines, be presented for inspection, it is obvious that but two of these muscles are required; and it is equally evident that, in curves of a circle, or ellipse, all must alternately be brought into action. The effect, then, is that, if only two be employed, as in rectilinear figures, those two have an undue share of labour; and, by repeating the experiment frequently, as we do in childhood, the notion of tedium is instilled, and we form gradually a distaste for straight lines, and are led to prefer those curves which supply a more general and equable share of work to the muscles. (*Mech. Mag.* Feb. 4. 1837) The above appears to us to explain the reason why groups of circular-headed windows, which are so frequently introduced into elevations in the Italian style, are so pleasing to the eye. — *Cond.*

ART. II. *Foreign Notices.*

GERMANY.

THE Palace of Wilhelmsburg at Brunswick. — An engraving of this splendid building has just been published at Paris, from a drawing made by C. F. Ottmer, its designer, and the superintendent of its execution. The style is Roman, highly enriched. The centre consists of a quadrangle, with a Corinthian portico over a triple archway, and it is joined to two wings by a Doric colonnade, like that of St. Peter's at Rome, and Casan at St. Petersburg, open on all sides. The wings are composed of two orders; a Doric on the basement, of the same height as that of the colonnade, surmounted by the Ionic. Taken altogether, this appears to be one of the most splendid residences of any private individual on the Continent; the proprietor, W. Von Marenholtz, being nothing more than a *Freiherrn*, which answers to the rank of Esquire in England. We have two trifling instances of what we think bad taste in this design: the first is the erection of the equestrian statues on each side of the main entrance, which are represented in the most violent motion, even much more extravagant than that of the statue of George III. in Pall Mall East; and which are totally at variance with Lessing's doctrine, that sculpture ought to be limited to the representation of objects in a state of repose. The second fault is, that the vases which surmount the colonnade are represented as filled with flowers; which is such a mixture of the real with the imitative, of the highly artistical with the purely natural, that we are at a loss to conceive how such an artist as M. Ottmer could endure it. The entire building stands on a raised platform, which has an exceedingly good effect as a foreground.— *Cond.*

Prague, September 16. — Monsieur Stamman, architect, of Hamburg, and formerly pupil of Gau at Paris, has recently paid a second visit to England. He has, for the last three or four years, been in Italy, completing his studies among the monuments of that country; and I believe it is very probable that he will ultimately settle at Prague. His brother, also an architect at Hamburg, has recently tried an experiment in that city which has set all the sober people a wondering. He has recently erected a house for one of the citizens, and covered it with polychromic (various-coloured) paintings, outside as well as in, following up the subject which now so much occupies the antiquarians and architects of Germany and France. The colours employed are, deep red, blue, and yellow; and the window bars are gilt. The art, in this country, has been lost since the times of our Gothic ancestors, who have left us numerous, though scattered, specimens of this decorative embellishment in their churches, chapels, tombs, &c., which were once resplendent with all the accessories of gilding, colour, and brilliant effect of chiaroscuro. — *S. L. F. H.*

RUSSIA.

A Column has recently been erected to the memory of Alexander I. in Petersburg, in the Place ——, of which the following are the dimensions: — Shaft of the pillar, in one piece of granite, length, 84 ft.; diameter, 12½ ft.; weight 350 or 400 tons. The bronze figure on the top is 15 ft. high, independent of the cross, or 23 ft. with the cross; weight, 13 tons. The bas-reliefs are in four plates; and the length of each 17½ ft.; the height being 10½ ft. Some ofthe figures stand out nearly 2 ft. The weight of the four plates is 44 tons; entire height of the monument, 154 ft.; weight of brass, 158 tons. The erection of this monument cost 10,000,000 of rubles, or 400,000*l.* sterling!; and it was erected in two years and a half. The stone pedestal on which the whole stands is 28 ft. square, and 7 ft. thick.

SOUTH AMERICA.

Railroad across the Isthmus of Panama. — The government of New Granada has issued a decree, authorising the establishment of a company for the purpose of opening a communication between the Pacific and Atlantic, across the Isthmus of Panama, by means of a rail, or a macadamised, road, and of navigating the river Chagres by steam-boats. (*Newspaper.*)

AFRICA.

Moorish Manner of building. — Temple, in his *Excursions in the Mediterranean*, gives the following curious account of the mode of building at Tunis, on the African coast: — "On speaking to the architect and engineers, and asking them to show me their plans, they, at first, did not seem to understand what a plan was: when it was explained to them, they declared they had nothing of the sort, and that, in fact, the Moors never made any previous to commencing a building; but that they built by the eye a certain length of wall, and that, when this had been sufficiently prolonged, another was built at right angles to it, and so on. What is still more remarkable, their arches are also constructed entirely by the eye, and have no framework to support them during the process; which is as follows: — A brick, presenting its broad surface to view, is placed with its edge on the buttress where is to commence the spring of the arch; another is made to adhere to it by means of a very strong cement, made of a gypsum peculiar to the vicinity of Tunis, which instantly hardens; on this brick is placed another in the same manner; and thus they proceed till the arch is completed. I saw a vault myself thus made in less than an hour and a half. These arches and vaults, when finished, are very graceful and correct in their proportions, and nothing can equal their strength and solidity. In building walls, an oblong frame, about 7 ft. long, and as broad as the wall is intended to be, is placed on the foundations, and then filled with mortar and pieces of stone. In a few minutes, the frame is removed, and placed in continuation of the line. This method appears to have been adopted in the construction of Carthage." (*Chambers's Journal*, Feb. 4. 1837.) May not the above mode of constructing arches be, after all that has been said on the subject, the real origin of the Gothic style? — *T. B. London*, Feb. 10. 1837.

Art. III. *Domestic Notices.*

ENGLAND.

The new Houses of Parliament. — I think every one who gave designs for the new Houses of Parliament should be examined before a committee, in order that the whole stock of knowledge accumulated by those individuals should be secured, and adopted where applicable. Every one should suggest his leading points; but no discussion should be permitted as to the style or site They should be allowed to suggest improvements in Mr. Barry's plans, which he should have an opportunity of repelling or adopting, like any other English trial. They should be allowed to give their opinion as to the means of construction and application of materials. Each man should be limited to the principles of his own design and Mr. Barry's. — *W. T. Norwich, Jan.* 15. 1837.

Addition to the Post-Office. — It is contemplated by Sir Robert Smirke to place a portico, or corridor, on the south end of the Post Office. — *Id. Feb.* 1837.

The Duke of Wellington's Monument. — Many sites have been suggested for this statue. There may be two or three open spaces in the approaches of London Bridge fit for it; but, if a few houses which now stand on the north side of Cheapside were razed, that would probably prove the best situation. The improvement which would take place from this alteration has often been pointed out. A view of the Cathedral of St. Paul's would be obtained from St. Martin's le Grand; and the site for the monument would be in the very centre of the metropolis, and on the highest ground. — *Id. Feb.* 1837.

Venetian Blinds made of Glass, instead of Wood, if the expression may be used, have recently been invented by Mr. Bailey, a glazier, and may now be seen at Mr. Fair's Exhibition Room, in Mortimer Street. The invention is pleasing and ingenious; and may, perhaps, with the improvements of which it is susceptible, come into occasional use in dwelling-houses and houses containing stores. It appears suitable for water-closets; and, properly arranged, would form the best of all roofs for those descriptions of plant-houses in which the plants remain under cover throughout the year. We pointed out this in our *Remarks on Hot-houses*, published in 1817; and not only illustrated by a plate (pl. vii.), of which *fig.* 29. is a copy, but had a specimen of it erected at Bayswater, where it remained for several years. The following is a description of the figure given in the *Encyclopædia of Gardening*. The polyprosopic hothouse (*fig.* 29.) resembles a curvilinear house, but differs in having the surface thrown into a number of faces; the chief advantages of which are, 1. That, by hinging all the different faces at their upper angles, and by

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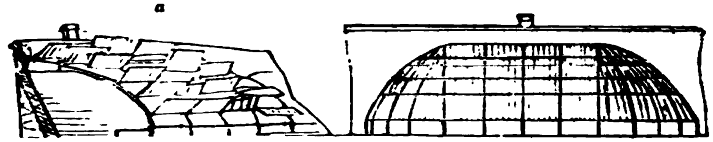

having rods connecting the lower outside corners of the faces, terminating in chains, which go over pulleys in the top, or above the back wall, the whole roof, including the ends, may be opened or raised sympathetically, like Venetian blinds (*a*), either so as each sash, or face, may be placed in the plane of the angle of the sun's rays at the time, or to the perpendicular, to admit a shower of rain. In consequence of this arrangement, the plants in a polyprosopic house may, at any time, and in a few minutes, be placed, in effect, or as far as respects light, air, wind, rain, dew, &c., in the open air; and, being so placed, may, whenever desired, be as speedily restored again to their proper climate. The arrangement by which this is effected, and which is perfectly simple, is applicable to every form of hothouse, whether of glass on all sides, on two, or on three sides; or whether the roof is formed of curved or straight lines. We consider it, indeed, to be the *ne plus ultra* of improvement, as far as air and light are concerned. One objection to all curvilinear forms is, that the roof, unless a considerable expense be incurred, must be fixed, and air admitted by horizontal wooden or glazed shutters in the parapets, or between the props, and allowed to escape by skylights or shutters at the top of the back of the wall. But here the air is equally admitted in every part of the house, in the most natural manner, without the creation of currents or eddies, and without excluding any more sun than will be obstructed by the thickness or edge of the faces or sashes. In like manner, a great objection to straight-lined roofs with sliding sashes is, that air can only be partially admitted, and that, while this is being done, one glazed frame being slid over the other, in all those parts where there is a double portion of glass, a double portion of light must be excluded; and the light so transmitted will be doubly decomposed, by passing through two surfaces of glass. (*Encyclopædia of Gardening*, new edition, p. 686.) We make this quotation, to show to our readers, and to Mr. Fair, to what important purposes Mr. Bailey's invention is applicable in gardening, if not in architecture. — *Cond.*

The Medals of the Institute of British Architects to be awarded in 1838 are: On the Excellencies of Athenian Architecure; on the Embellishment, by Colour, of the Architectural Members of Gothic Architecture; and on the Improvement made, during the last 100 Years, in the Theory and Practice of Construction. Besides these, there is the Soane Medallion, which is to be awarded for the best restoration of some ancient religious building or castle. We refer for farther details to the advertising sheet; remarking only, that, as the subjects are of very great interest and importance, and as the competition is not confined to members of the Institute, we trust there will be many candidates. Even to fail in such a competition is honourable, and, by the studies it will require, must be beneficial to the student.— *Cond.*

ART. IV. *Institute of British Architects.*

February 27. 1837.— G. Moore, Fellow, in the Chair.

Elected. J. P. St. Aubyn, Wakefield Street, Regent Square, and H. J. Whitling, Berners Street, Oxford Street, as Associates. M. A. L. T. Vaudoyer, Arch., Member of the Institute of France, as an Hon. and Corr. Mem.

Presented. A work on the Caracalla Circus, 2 vols. 8vo; Antiquities of Rome, 2 vols. 8vo. Thou's Restoration of the Palace of the Cæsars. Greece and the Levant, 2 vols. 12mo; by the Rev. R. Burgess. Memoir of M. Durand, Arch., by M. Rondelet. Prints of Christ Church, Doncaster, and St. George's Church, Sheffield; by W. Hurst, Fellow. An Enquiry into the Motive of the Representations on ancient Coins: 8vo; by T. Burgon, Esq. Archœologia, 16 vols. 4to; by the Antiquarian Society. Essay on the Restoration of the Pyramidion to the Pyramids of Luxor; by M. Hittorff. Prints and Plans of the Goldsmiths' Hall, of the City Club House, of the St. Catherine's Docks, of the Entrance to the London and Birmingham Railway, and of the New Crescent, Dover; from P. Hardwick, Fellow. Essay on the Causes of Dry Rot in Buildings; by J. P. Papworth, V. P. Specimens of Portland Stone, by J. B. Gardner.

Read. *Letters* from Mr. Rickman of Birmingham, respecting Kyan's Patent; from M. Chateauneuf, H. and C. M., communicating the Particulars of a Competition for the New Exchange, Hamburg (See p. 149.); from M. Gau, H. and C. M., acknowledging the receipt of the *Transactions*, and promising to read Part 3. of Mazon's *Pompeii;* from the Royal Academy of Fine Arts of Berlin, acknowledging the Receipt of a copy of the *Transactions*, and promising to send in return any works which the Academy may publish; and of which the following is an extract: "The position which the Academy holds is somewhat peculiar, as it takes an active part in the direction of every thing relating to the Fine Arts, and of the schools destined to this end, in all the principal places of the kingdom; even of Commerce, whenever any new inventions are produced, or any works susceptible of taste and beauty, they are submitted to its inspection, in order that talent may be encouraged in every quarter, by means of these institutions, which date their origin from the reign of Frederick II. The meetings of the Academy are rather designed to enquire into matters, to grant patents of invention, and to award medals and rewards for the encouragement of the arts. The discourses delivered at the public meetings, which take place twice a year, are printed in the *State Gazette.*"

A letter from Seevajee Rajah of Tanjore, Hon. Mem., addressed to Earl de Grey, President, of which the following is an extract:—"In your Lordship's letter a desire is expressed that accounts might be afforded of the several Hindoo temples in the Fortress and province of Tanjore. The sculptures in the Temple of Audiarcoil are particularly recommended to attention. I am not in possession of any written information respecting the temples alluded to, but I shall use my endeavours to procure accounts of them; although I fear these can be but traditionary. I hope, however, to be able soon to transmit to the Institute drawings of some of the sculptures in our sacred buildings, particularly the one at Audiarcoil."

A letter from Col. Maclean, President at the Court of Tanjore, communicating information respecting works executed by Taghirdar Rama Sawney. A paper by the Rev. R. Willis, Hon. Mem., descriptive of a new instrument invented by him, for tracing the profiles of mouldings, and called the *Cymagraph*. A translation, by T. L. Donaldson, Hon. Sec., of the Essay on the Restoration of the Pyramidion to the Pyramid of Luxor, from the French of M. Hittorff. An Introductory Paper by Dr. Dickson on the Physiology, Structure, and Properties of Woods used in Construction.

March 13. — P. F. Robinson, V. P. in the Chair.

Presented. Plans, Elevations, &c., of the Cathedrals of Gloucester, Exeter Durham, Bath Abbey Church, St. Alban's, and St. Stephen's Chapel, Westminster; by J. Carter; folio: from the Antiquarian Society. A Bust of King William IV. from J. Rennie, jun., Esq. Le Cabinet de la Bibliothèque de Ste. Généviève: folio, plates. Observations on a Letter from W. R. Hamilton, Esq., to the Earl of Elgin, on the new Houses of Parliament. View of Charmouth Church. The Churches of London, Part 3.

Read. A Paper by M. Schultz on some Roman Constructions on the Rhine, and on the Roman Mode of mixing Mortar, as described by Vitruvius. A Memoir of M. Durand, Arch., author of the *Parallel*, and of the *Leçons d'Architecture.*

THE
ARCHITECTURAL MAGAZINE.

MAY, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *On certain improved Methods of constructing Valves or Sluices, as applied to Canal and Dock Gates, &c., and similar Works of Hydraulic Engineering.* By Robert Mallet, M.R.I.A., M.S.C.E.I.*

Any improvement which can be offered upon the known methods of retaining, and at will rapidly discharging, masses of fluid of considerable volume, cannot be looked upon as unimportant, when we reflect that upon the rapid and effectual performance of this apparently simple operation depends much of the speed of inland navigation, and of the useful management of our docks and harbours.

I have therefore ventured to bring before this Society the following considerations upon the methods at present in use in the construction of valves and sluices, as applied to canal and dock purposes chiefly; and to suggest the application of certain methods of formation of valves for these and similar purposes; which, I conceive, possess some not unimportant advantages over those now commonly used.

What I propose to effect, as contrasted with the present sliding sluice, is briefly this: —

That whereas the sliding sluice is exposed to statical pressure over its whole surface, in proportion to its depth; so the friction of its sliding surfaces increases likewise, rendering it, at all depths, difficult of motion; and at considerable ones, either immovable, or impracticable of application at all. Hence, to open and close such sluices, mechanical arrangements of great power are required, involving complexity of structure, and proportionate loss of time; and, further, as usually made, they are difficult to preserve water-tight. Finally, they can neither be constructed nor moved in deep water beyond a very limited size.

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* The following paper was to have been read at the last annual meeting of the Civil Engineers' Society of Ireland, but the reading of it was prevented by an unforeseen necessity of the author's absence.

The valves which I propose to substitute for them, on the contrary, are exposed to statical pressure on but a very small segment of their entire area; and at great depths, if desirable, *all* statical pressure may be removed or equilibrated: they can be moved with ease, however large, and with scarcely any mechanical combinations to effect their motion, consequently, with saving in time. They can be readily made absolutely water-tight; and can be increased in dimensions, almost without limit, without interfering with those properties. The principle of the valve now about to be considered is not new; but, to my knowledge, its application in the way and to the purposes I now propose has never before been made: this is all I mean individually to lay claim to.

About the year 1780, Hornblower proposed and applied to the expansive steam-engine, which he patented, a circular lifting-valve, *with two seats*, so arranged as to open with but little resistance when exposed to the pressure of high steam. It is unfortunate that this valve is not better known than it appears to be, combining, as it does, so many important advantages with great facility of execution. It can, however, scarcely be said to be known amongst the greater number of steam-engine makers, and is no where in extensive use but in Cornwall and South Wales, where it is commonly used in the nozzles of large engines.

Its general construction is as follows: — A metallic cylinder (*fig.* 30., *a a*), of given diameter and altitude, has got two ground conical valve-seats (*b b* and *c c*), one inside at its lower edge, the other outside near its upper edge. When the valve is closed, the lower end meets a fixed obstruction equal in diameter to the circular area of the cylinder (*d d*), at the same time that the upper seat (*c c*) is in contact with another obstruction, or annular ring (*e e*), projecting inwards from the valve-case (*f f*), or tube, within which the whole is placed, and to which these two obstructions are united, together closing up its whole area. The internal diameter of the valve-case (*f f*) is greater than that of the internal cylinder (*a a*), by a quantity such that the annular space betwixt the two cylinders shall be at least equal to that of the internal one. Hence, it is obvious that, when the latter is not in contact with the lower seat (*d d*), there is a free passage between it and the sides of the valve-case, and on through the centre of the inner cylinder; and, further, that when the latter is again brought into contact with the lower seat (*b b*), and at the same time (by our premises) with the upper seat (*c c*), all passage through is closed. This being understood, it is obvious that we have here got a valve differing in form from the common spindle-valve, but capable of performing all its functions, and possessing certain peculiar properties in addition. Let us

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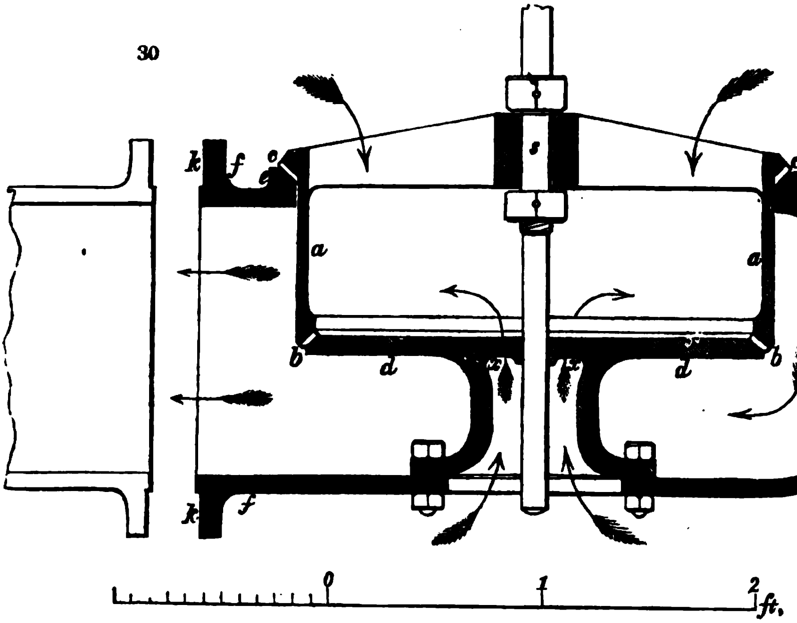

now consider the relations that will be found between a valve so made, and an ordinary lifting, or spindle, valve; and afterwards, a sliding, or draw, sluice, when exposed to statical pressure. Calling, then,

A = the area of any surface exposed to fluid pressure;
D = the depth of its centre of gravity immersed in the fluid;
s = the specific gravity of the fluid;

then, in all cases, we have the following equation for the pressure perpendicular to the surface pressed: —

$$P = DSA. \qquad (1.)$$

Hence, in the ordinary spindle-valve, omitting any correction for the *mitre* of the valve, and adopting the usual notation for the area of the circle in terms of the radius, we have

$$P = Ds.\pi r.^2 \qquad (2.)$$

and in a rectangular, whether sliding or lifting,

$$P = Ds.bl. \qquad (3.)$$

where b and l are the respective sides of the rectangular aperture.

If we take the values of A and D for units of area and depth, then s becomes equal the weight of a cube of the given unit, for any given fluid; and, taken in pounds avoirdupois, will be,

$$\left.\begin{array}{l}\text{For fresh water} = 62{\cdot}5\text{ lb.}\\ \text{For sea water} \;\;= 64{\cdot}2\text{ lb.}\end{array}\right\}\text{at a mean temperature.}$$

Referring now to the double-seated valve: when closed, the pressure is distributed upon the lower seat (*d d*), the interior of the cylinder (*a a*), the upper edge of the same cylinder, and the upper seat (*e e*). The pressure upon the lower seat is the same as that for a circular valve of equal diameter, —

$$\text{P} = \text{D}s.\pi r.^2 \qquad (4.)$$

This pressure, it is obvious, is wholly resolved against a fixed point; viz. against the base of the valve-case.

The pressure against the interior of the cylinder (*a a*), whose altitude is = H, is,

$$\text{P}^1 = \text{D}s.2\pi r.\text{H}.^* \qquad (5.)$$

But these forces, being distributed round the internal circumference of the cylinder, mutually equilibrate: their resultant is therefore = *o*. Hence, the entire resistance to opening the valve due to pressure is that on the *annular* space between the two seats, measured in a plane perpendicular to the axis of the cylinder. Or, if *r* and *r′* be respectively the radii of the upper and lower seats, then the entire pressure acting against the valve will be,

$$\text{P}'' = \text{D}s(\pi r^2 - \pi r'^2): \qquad (6.)$$

and, calling F the friction of the valve in its seats, &c., and W its weight, the total resistance to its opening will be,

$$\text{R} = \text{D}s(\pi r^2 - \pi r'^2) + \text{F} + \text{W}: \qquad (7.)$$

and as, by the property of the circle, its area

$$\text{A} = \text{C}\tfrac{r}{2},$$

C being its circumference, the proper lift for this description of valve, or the value of H, in Equa. 5., will always be equal to one fourth the diameter of the internal cylinder of the valve, with a small addition to allow for the contracted vein.

It is obvious, from the foregoing brief examination of its properties, that the force required to open a valve thus circumstanced is inconceivably less than that demanded to lift a common valve, or even to slide a common sluice against equal pressure. Indeed, *all* pressure may, if required, be removed from valves of this construction in various ways; either by causing the fluid to press upon the valve from its lower side, in which case its tendency will be to open it; or by equilibrating the pressure upon one valve by that upon a second in the opposite direction; or by a float, or various other expedients, that will readily occur. Or, finally, the pressure on the valve may be reduced to a negative

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* In valves situated as those shown in *figs.* 38, 39., the entire pressure on the cylinder above the valve, or cast-iron tubbing, may be had in terms of that on the valve and seats. For if P′ and P be those pressures respectively, then

$$\text{P} = \frac{\text{P}'\,2\,\text{H}.}{2\,r.}$$

H being the total altitude of the immersed tubbing; for,

$$\text{P}' : \text{P} :: 2r. : 2\text{H}.$$

quantity, so as just to equilibrate its weight and friction, and leave it movable by the smallest possible force. The value of this, practically, will best be shown by an example.

A square valve of 22 in. on the side of its clear aperture, and having a lap of 2 in. all round, to make it staunch, will have a surface exposed to pressure of 26 × 26 = 676 square inches; and, at a depth of 30 ft., will sustain a statical pressure (Equa. 3.) of about 8750 lb. in fresh water, or nearly *four tons*.

If it be required to be opened by lifting, this whole pressure has to be overcome.

But if it be a draw-sluice, or be opened by sliding, then the sliding surfaces, or lap of the valve, as before = 192 square inches. Hence, 676 : 192 :: the pressure on the whole valve : to the pressure on the lap; so that the pressure on the bearing faces is = about 2350 lb.; and, taking the results of Coulomb's experiments, one fourth of this will be nearly the friction, if the sluice be of oak on oak; or about one seventh, if of iron on brass ground facings, at first starting.

So that, in the former case, the actual force required to slide a sluice no larger than 22 in. square, of oak, will be = 587·5 lb.; and in the latter case, namely, with brass faces = 335·7 lb.

Now, fluids issuing from a sliding sluice are to be considered as subject to the contraction of the fluid vein, due to passing through a *thin plate*; but, from the formation of the valve now proposed, the issuing fluid, in all cases, will pass through a tube, or cylindrical aperture, of about two diameters in length. Hence, to produce equal expense in a given time, with a common draw-sluice and a double-seated valve, their areas must be in the ratio of the discharges through their respective kinds of apertures; and, adopting the coefficients determined by the experiments of Michellotti and Bossut, the area of the double-seated valve will be to that of the draw-sluice as 65 to 81 nearly.

Or, in other words, a double-seated valve of about one fifth less area will discharge as much in a given time as a draw-sluice. Hence, in the present example, a double-seated valve of 24 in. diameter will be more than equivalent to a sluice of 22 in. square.

Taking, then, the pressure on a valve of this size at 30 ft. in depth from Equation 6., and supposing the internal valve cylinder to be three eighths of an inch in thickness, the area exposed to pressure will be = 27·8 square inches nearly, and the entire resistance to opening the valve due to pressure will be = 357 lb., at the *moment before the valve opens*; but, when it has opened the least portion, almost all pressure is relieved from it; whereas, in the draw-sluice, the resistance is as great when partly open as when closed; accordingly, the arrangement designed for opening the double-seated valve is such as to give almost *an infinite power* at the commencement of the opening of the valve, as will be hereafter described.

It will further be observed, that, as the area of valves of this description increases, the ratio of $\pi r^2. : \pi r'^2.$ diminishes, so that the actual resistance becomes less in proportion as the capacity of discharge becomes greater.

The advantages, then, that I conceive to accrue from the substitution of these valves for common sluices are, —

1st. Economy of original construction in large valves, and of wear and tear in all sizes.

2dly. Economy of labour in working them, and, consequently, in time.

3dly. The capability of using much larger apertures of discharge for canal and dock purposes than any at present practicable, and, hence, increased facility in the lockage of boats and getting of ships into dock, &c.

4thly. The ordinary sliding valve, or sluice, requires an amount of motion, to fully open it, equal to its entire diameter; whereas the double-seated valve, when fully open, has only moved a distance equal to one fourth of its diameter.

We will now proceed to describe the accompanying drawings of the valve in its various applications, together with the gearing proposed for moving it. In *figs.* 30, 31, and 32., a double-seated valve of 24 in. aperture is shown, in vertical section, plan, and elevation, as arranged for application to dock or canal lock-gates, dams, &c., where the valve-case is secured to the retaining

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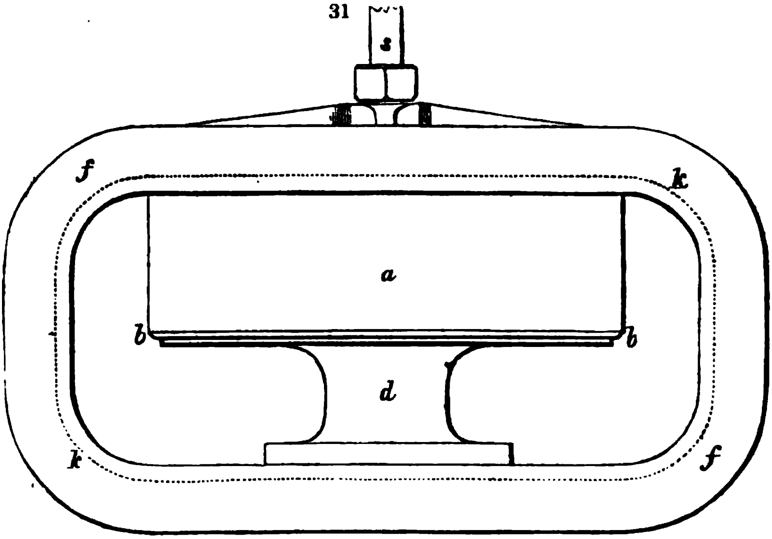

medium, whether gate or other thing, by the flange *k k*. The same letters refer to *figs.* 30, 31, and 32. *f f* is the valve-case, a single casting in loam; to which the lower valve-seat (*d d*), is secured by bolting: *a a* is the movable part of the valve, or inner cylinder, having its two seats (*b b* and *c c*) faced with brass. These are fitted staunch to the corresponding seats of the valve-case, by turning and boring, and subsequent grinding. *s* is the wrought-iron valve-stalk, communicating with the gear by which motion is given to the valve: its lower part forms a guide to the valve, passing through a bridge (*x x*) across the hollow neck supporting the lower seat. When the valve is open, the fluid

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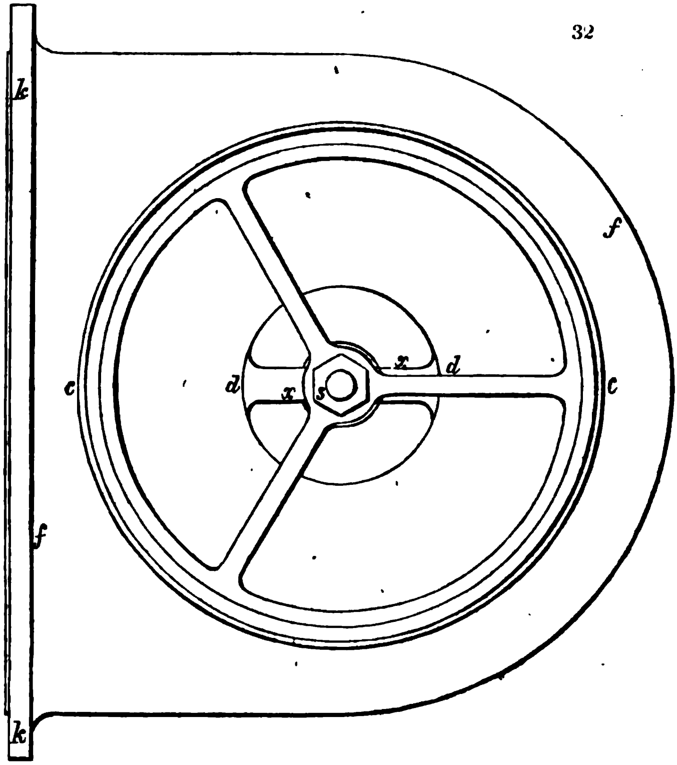

takes the course indicated by the arrows; passing downwards through the internal cylinder, upwards through the hollow neck of the lower seat, and laterally through the flange *k k*, and whatever it may be secured to. In the plan exhibited in *figs.* 36. and 37., valves thus circumstanced are shown applied to dock-gates of the largest class. It will be seen that they in no way interfere with the framing, within which they lie very conveniently.

Two valves are here shown in each gate; but it is obvious that five valves might be readily placed in each, without diminution of strength, or any considerable increase of complexity; thus opening simultaneously a united aperture of discharge in the pair of gates of *forty circular feet in area;* an amount that could be, probably, in no way obtained by sliding sluices, without immense sacrifice of strength in the gates, and of labour in working.

When the principle of the working gear for these valves is described, this plan (*figs.* 36. and 37.) will be sufficiently clear without further explanation.

Figs. 33, 34, and 35., belonging to the first plan, represent the modification of gear adapted for moving small valves, and will render clear the principle of all. *a* is a circular disk of cast iron, cast in one piece with the shaft (*b*), which lies in the plummer blocks (*d d*), cast in one piece with the foundation plate (*e e*), which is bolted to any suitable framing above the valve. The disk (*a*) is provided with a ratchet on its rim, or edge, engaging with the pall (*f*), which is supported in bearings cast on the foundation plate. This sustains the valve at any required height.

At a certain distance from the centre of the disk (*a*), is fixed into it a wrought-iron pin, or axle, like a crank-pin (*g*), which takes a strap-link, and is finally united, by a suitable length of valve-stalk, with the valve.

When the latter is closed, this pin stands nearly at the lowest point of the disk (*a*), which is provided with a socket (*c*), for the insertion of an iron lever or hard-wood handspike; by turning which in the direction of the arrow (*fig.* 34.) a certain number of degrees, the pin (*g*) will revolve the same number, and, in doing so, will elevate the valve, the pall falling in, and retaining it at any desirable spot. When this latter is thrown out, of course the valve may be lowered.

Now, it is obvious that the principle of this arrangement is the same as that of a common crank and connecting-rod, or of the *toggle-joint* used in the Stanhope and other presses, and that the power is a maximum at the first opening of the valve.

Its simplest form is here shown, and in *fig.* 37., referring to the same letters, where it is nothing more than a lever with a variable purchase. In *fig.* 37., a winch is used in place of a handspike.

If, in the arrangement thus described, we suppose the crank-pin at the lowest point, and call F the force in the tangent, or that applied to the lever, and tending to turn round the crank-pin; and T and T′, the resistance to opening of the valve, and the strain in the line joining the crank-pin with the centre of motion, respectively; then these three forces will be analogous

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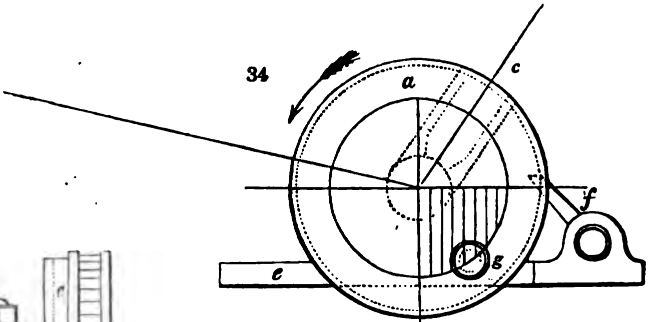

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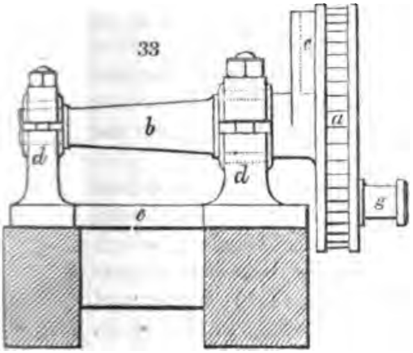

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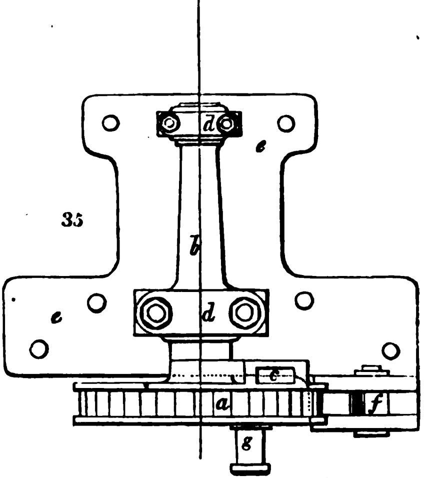

each to the sine of the angle contained by the other two: and, if we assume $T = T'$, and take a to represent, in this case, half the angle contained by these forces, then we have,

$$F : T :: \sin. 2a : \sin. a. \text{ or } :: 2 \cos. a : 1.$$

$$\text{and } F = 2 T \cos. a.$$

But, in the case assumed, the centre of motion (the crank-pin), and centre of gravity of the valve, are in one right line; hence,

$$a = 90° \text{ and } \cos. a = 0.$$

and, therefore, F infinitely less than T for equilibrium; or, in words, if the valve-stalk, &c., were absolutely inextensible, any force, however small, would open the valve, however large or heavy. This, from the properties of matter, it is obvious, can never be so in practice. But it will be seen that F varying as *cos. a*, the power is a maximum when it is most required; namely, when the valve is first raised from its seats.*

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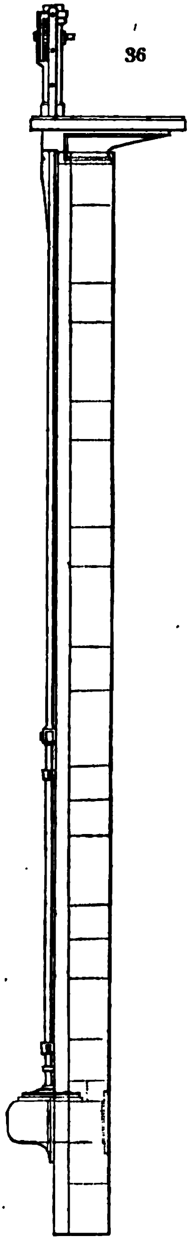
* Tredgold has shown that, if a be the angle the valve-stalk, or connecting-rod, forms with (in the present case) the vertical, c the angle described by the pin g, counted from the lowest point, then,

$P \sec. a =$ the force in the direction of the connecting-rod;



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In *figs.* 38. and 39., additional power is shown to be gained by the application of a pinion, gearing into teeth, placed on the periphery of the disk to which the crank-pin is attached.

In this plan the valve is shown at large which is applied to the lock-chamber shown in *figs.* 40. and 41. It is 6 ft. diameter, and formed of cast iron without brass facings. The same letters of reference are used as in *figs.* 30, 31, and 32.; and the construction of the valve itself is the same, with the exception of wrought-iron diagonal stays being introduced (*n n*), to prevent the valve under the pressure from changing its shape.

Here, also, the valve-case is formed below the upper seat entirely of masonry; but above that, the vertical tunnel, or conduit, which would be always full of water, is shown of cast-iron tubbing. It might, however, be formed of good masonry with puddling at the back. The cheapest and best method of construction, however, in most cases, would be the tubbing.

The lower seat of the valve is secured to the masonry by a large ribbed plate cramped in, to which it is bolted with suitable chipping strips for adjustment. The upper seat is secured to a large circular ring built into the masonry (*f f*), to the upper side of which, and upon which, the tubbing rests. The water enters the vertical tunnel over the valve from the upper level, or lock, by the conduit *y*, and passes off from under the valve by the other conduit *z*. The latter, except when the valve is open, will be always empty, and affords the means of getting in under the valve, at any time, to examine it as to staunchness, &c.

The central support of the lower valve-seat is a short hollow column, with radial ribs to stiffen the bottom plate (*d d*). It will be seen that adjustments are provided for every part of the valve in its place, and that the arrangement admits of the utmost facility in getting at the valve above or below. The valve-stalk (*s*),

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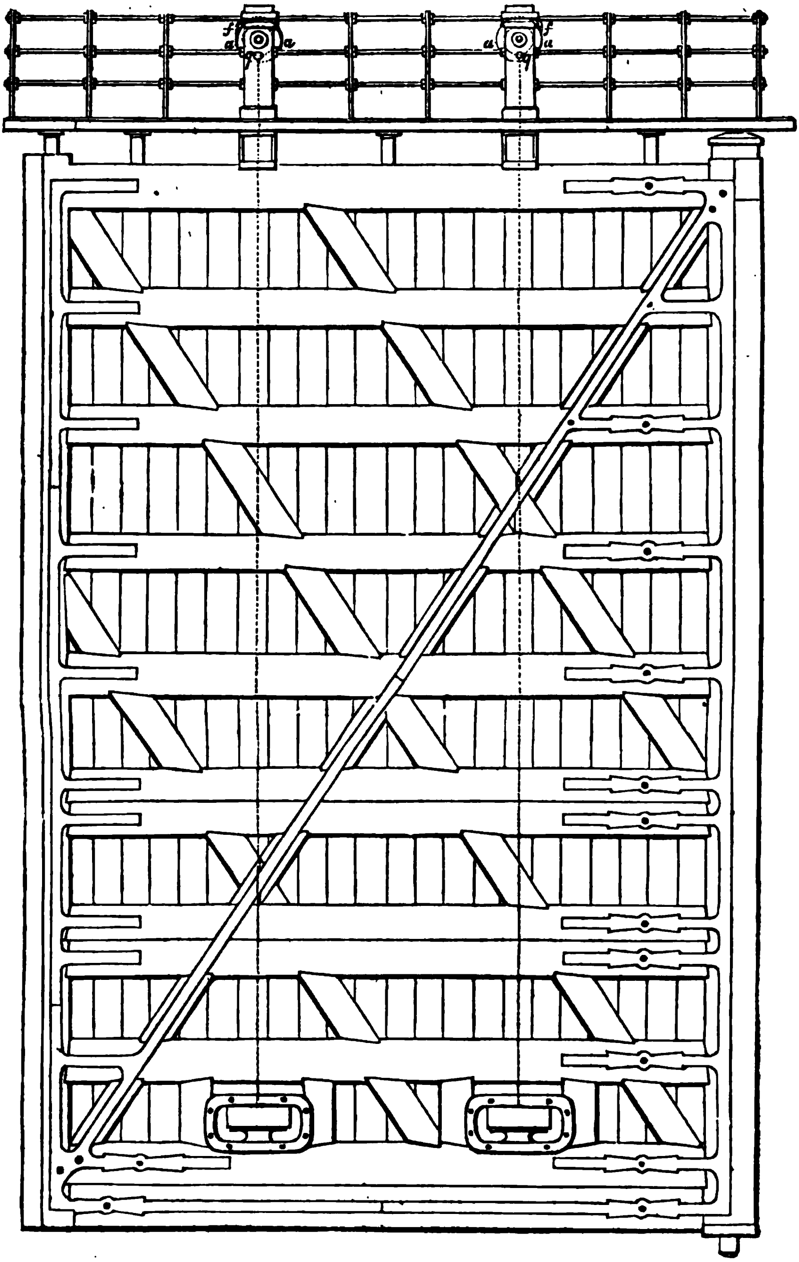
and, when the length of this rod is *n* times the distance of the pin *g* from the centre of motion,

$$P. \sin. c. \left(\frac{\cos. c.}{\sqrt{n.^2 - \sin.^2 c.}} + 1 \right) = \text{the force at any angle, } c.$$



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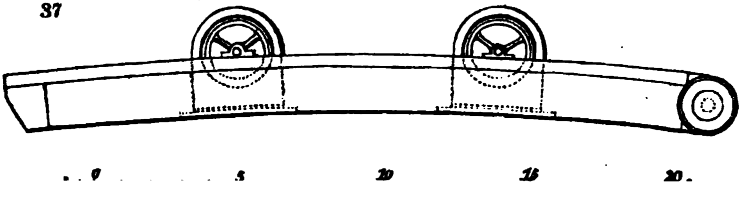

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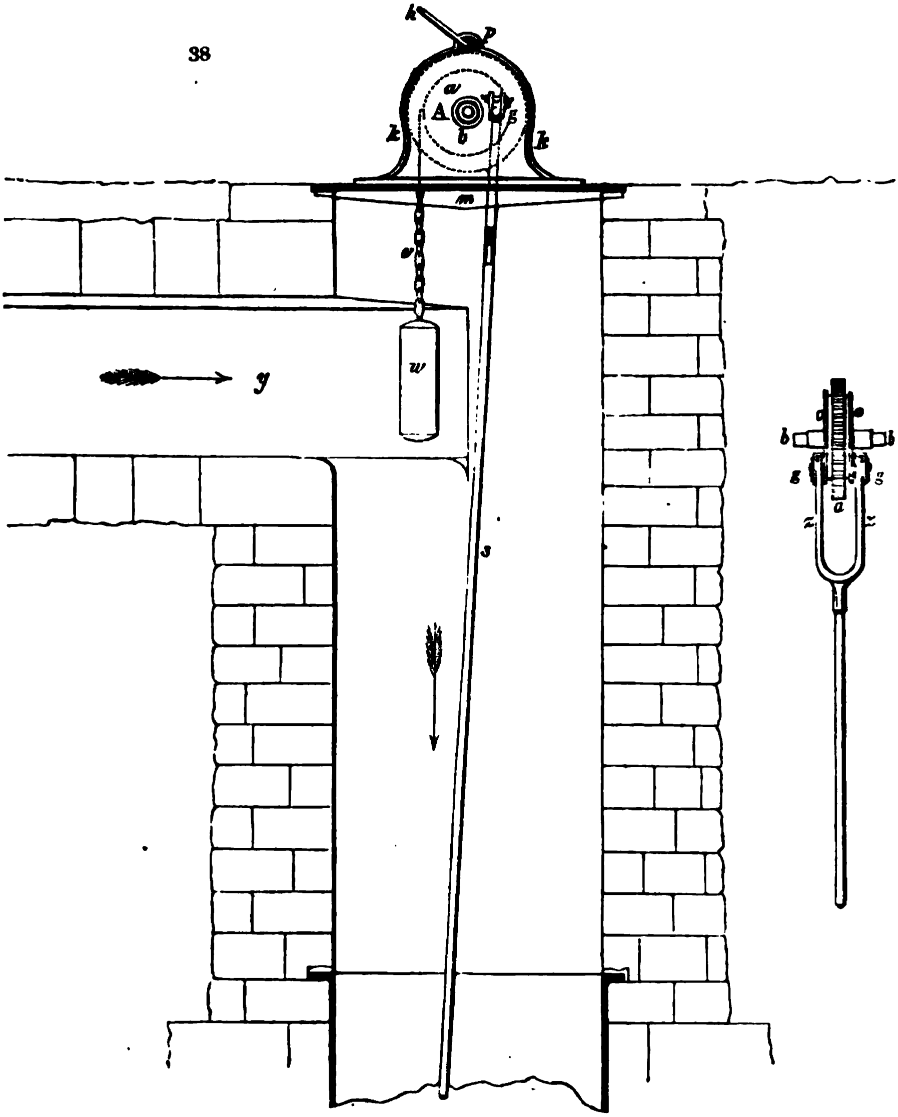
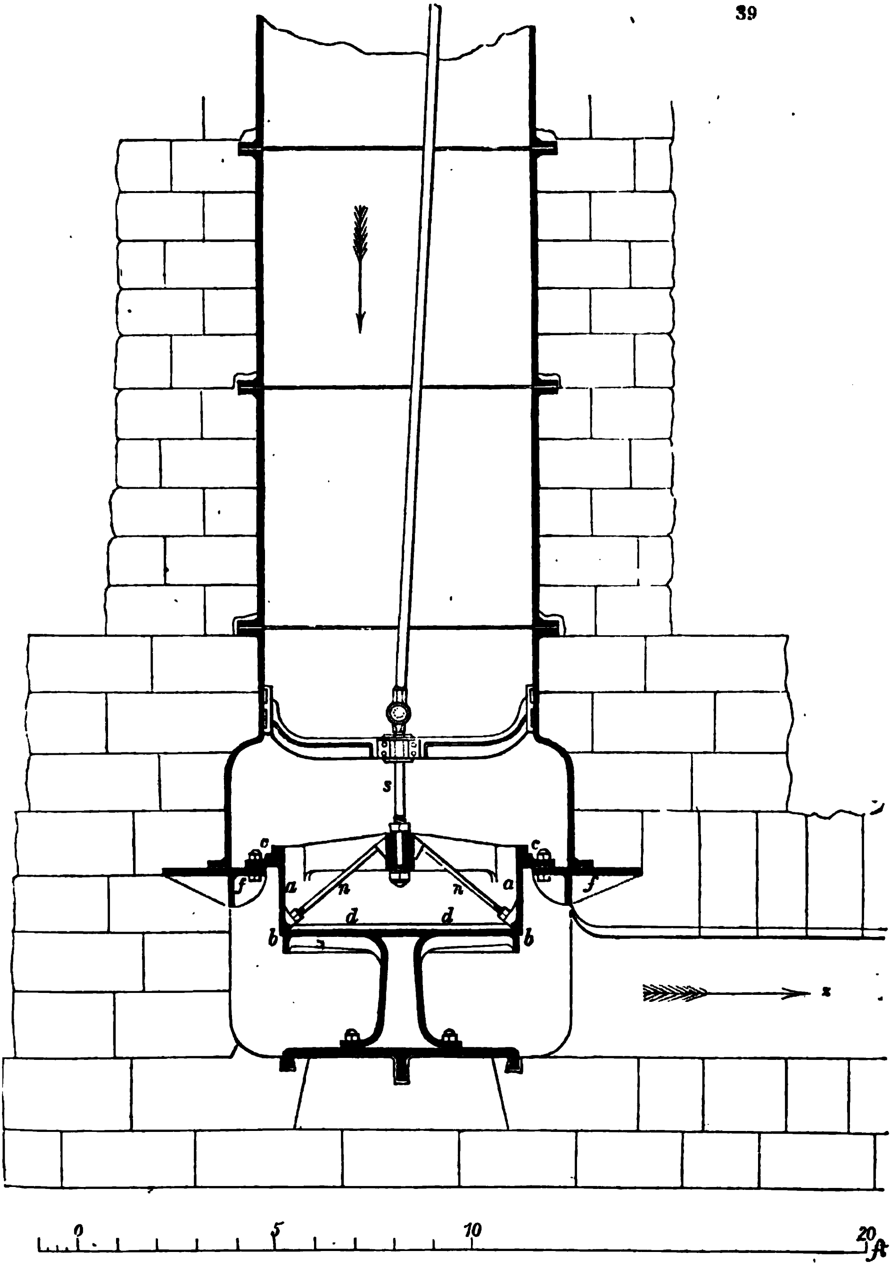
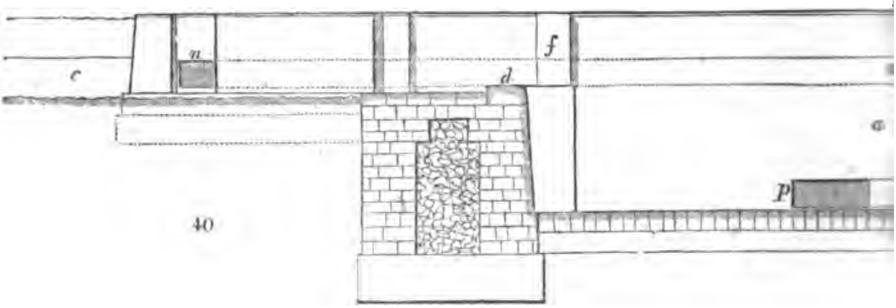


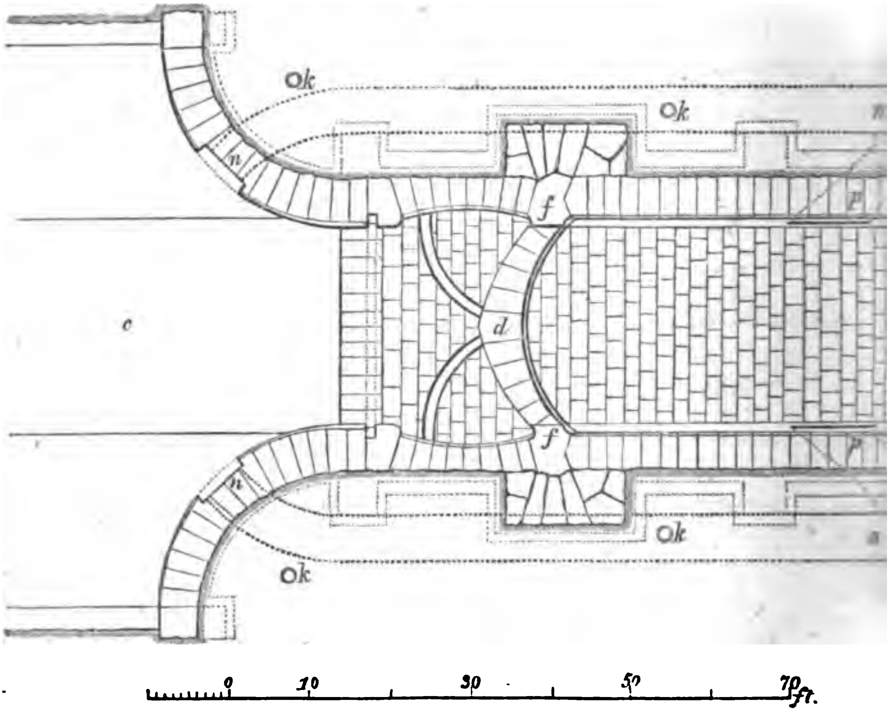
at its upper end, consists of a fork (*z z*), with a strap-link at each extremity, which takes the crank-pin (*g*) at each side of the disk, or solid wheel (*a*), with teeth on its edge, and wrought by a pinion and winch, as before described. At each side of this disk is cast to it a roller (*o o*), or drum, round which the chain (*v*) of the balance-weight (*w*) wraps, and unwinds itself when the valve is raised. This weight hangs just above the water in the tunnel

39



and relieves the moving power of the weight of the valve and stalk; but, as soon as the valve has been raised a little, and, con-

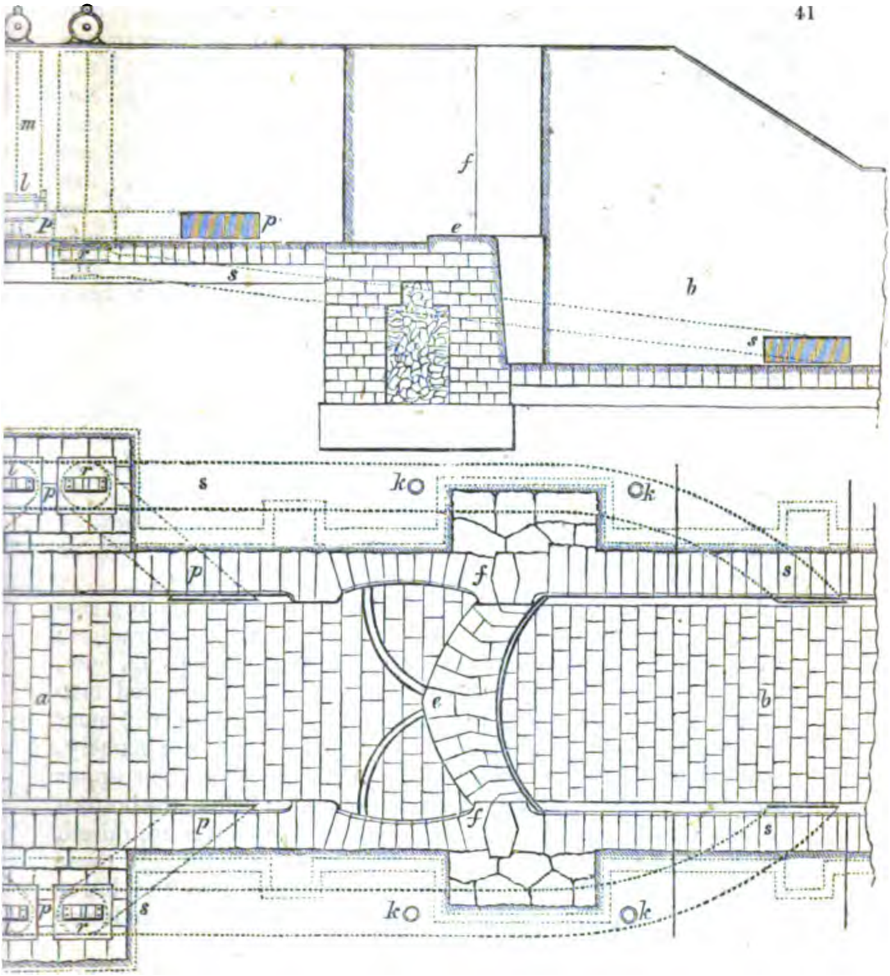




sequently, much of its resistance taken off, the weight also begins to lower into the water, and thus reduce its own preponderance by an amount equal to the difference between its weight in air and in water.

It will be observed that the forces are arranged symmetrically on both sides of the disk, or wheel (*a*), so as to produce equal stress upon both ends of the shaft (*b b*).

The pall for retaining the valve up is on the same shaft with the working pinion, and falls into the teeth of the disk-wheel.


41

We now come to describe the application of this in *figs.* 40, 41., which represent, in plan and section, the masonry of part of a canal double lock of a large class, to which these valves are applied.

The same letters refer both to plan and section: *a* is the upper lock-chamber; *b*, the lower one; *c*, the forebay of the upper lock; *d*, the sill of the upper gates; *e*, that of the lower ones; *f f f*, &c., being the hollow quoins. I would here premise, that I do not profess to bring this sketch forward as an example in point of masonry, &c. (in which, however, I believe there are no palpable blunders); but merely as the vehicle for showing the intention of these new valves. *l l*, &c., are the double-seated valves for admission of the water into the upper lock-chamber, to fill it: they are situated near the bottom of the vertical tunnel *m*, as shown at large in *figs.* 38, 39. When these valves are raised, the water passes from the upper level, through the conduits *n n*, down through the tunnel, and into the chamber, by the lower conduits *p p*, &c. The direction of these conduits is so arranged, that the vast volume of water they would pour forth would but little disturb the water in the chamber, and cause little or no motion to the boat or ship in rising; their directions being in what may be termed the lines of "least fluid disturbance." This will be sufficiently seen by examining for a moment the compositions and resolutions of motion that will take place when one or both valves (*l l*) are opened.

When these two valves are suddenly opened, the rapid eduction of water from nearly the bottom of the forebay (*c*) will cause no disturbance there beyond a mere eddy; for, in some large experiments formerly tried under my inspection, it was found that the sudden opening, in a canal, of apertures so situated, *produced the greatest depression of surface at the remote end of the level, however long; and this depression instantaneously followed, or even was absolutely coincident with, the opening of the apertures, or sluices, although in the experiments distant nearly* 1000 *ft.*

I am not aware that this phenomenon has been before noticed, or predicted by engineers, or the writers on hydraulics; and it is one extremely curious and beautiful. Supposing, now, the upper chamber full, and the boat ready to be lowered into the lower one; the second pair of double-seated valves (*r r*) must be opened: they are situated lower than the pair *l l*; namely, a little lower than the bottom of the upper chamber, their upper seats being nearly on a level with, or somewhat below, the bottom of the diagonal conduits *p p*. As soon as these valves are raised, the water in the upper chamber passes backwards through these conduits, through the valves *r r*, and down into the lower chamber (*b*) by the conduits *s s*, &c., delivering into the lower chamber in the same direction of least disturbance.

The lower chamber is emptied into the lower level by one other pair of double-seated valves, nearly like the last pair described.

Thus, in place of having 18 *sliding sluices to raise and lower* (a common number for double locks, there being usually, to each pair of gates, 4 gate and 2 land sluices), 6 *valves do the whole work*. In place of the greater body of the water being discharged over the gate-sills into the chamber, and often wetting the boat and cargo, it is all discharged quietly, and in vastly increased volume, into the bottom of the chambers.

It is proposed here to have no sluices at all in the gates; thus enabling the latter to be made stronger and cheaper, and occasioning them to need fewer repairs.

In the upper conduits (*n n*), seats for temporary wood sluices are provided, by sliding in which any of the valves can be got at, either above or below; and any repair, &c., executed, without running off any level, or stoppage of the navigation.

The filling and emptying sluices being nearly close together, little time will be lost in running from one to the other, as is usually the case. *k k k*, &c., are the situations of the crabs, capstans, or other means necessary for opening and closing the gates, as ordinarily in use.

I should have mentioned earlier in this paper, that one of the important advantages of these valves over sliding sluices is, that, whereas the latter require nearly as much force to shut them down as to open them, the double-seated valves shut themselves, or fall by their own weight and the pressure of the fluid; thus, in this particular alone, abridging the labour *one half*.

It is obvious, in the arrangements of these valves just described, that the full of the tunnels *r r* will be wasted at each lockage. In many cases, this will be of no importance; but, where economy of water is to be observed, a plate of cast iron, or diaphragm, may be placed horizontally across the tunnels *r r*, just above the level of the top side of the conduits *p p*, having a small tube or pipe of cast iron projecting upwards from its centre, just sufficient to carry and allow free play to the valve stalk: by this means, instead of the whole tunnel being filled at each lockage, merely this small pipe will be so.

An example of the practical importance of all this may be given. On the Royal Canal leading from Dublin to the west of Ireland there are about 40 locks, each something about 70 ft. long by 15 ft. wide: a boat *may* be passed through one of these double locks, by having a man to each sluice, in about 3½ minutes; that is, by having about ten men employed in the lockage: but the average time of the passage of each boat exceeds 6 minutes, and is often 8 or 10 minutes.

Now, the total apertures of the 6 sluices in and at one pair of gates is about, or perhaps under, 10 ft. square: by using these valves, a total aperture of 60 square feet could readily be provided; and as, under the same head of water, the times of filling will be inversely as the apertures of discharge, the time of passing a boat through a double lock would be reduced to one sixth; or five sixths of the time consumed in lockage on the whole line would be saved; thus giving on the whole line, supposing the number of locks to be 40, *a saving in time of 3 hours and 20 minutes.*

Hitherto, I believe, large sluices to lock-chambers have never been attempted any where but on the Ellesmere Canal: there the sluices draw from the forebay, and discharge into the chamber *under* the sill of the gates; but they are common wood sliding sluices, and must be very unwieldy in use, and liable to accident. It will be admitted readily, that no difficulty is likely to arise in the application of these valves in original construction; neither is there any difficulty in substituting them for the common sluices now in use on lines of canal already constructed, and that without any material obstruction tó the navigation. And, should it appear that these valves do really possess the advantages which I fancy I have shown them to have, there never was a time when canal proprietors were more called upon to take advantage of this or any other improvement upon their means of rapidly transmitting goods, &c.

Before concluding the present subject, I am desirous of describing a new arrangement of gearing for opening and closing large lock or dock gates. It is well known that the usual method of effecting this object in British engineering is by means of crab windlasses acting upon chains made fast to the gate, the windlasses being placed on the land.

By this arrangement, it is necessary to have for each pair of gates 4 complete crabs (or 12 for a double lock), besides expensive tunnels for the chains to run in, armed with friction rollers wherever the chain deviates from a right line. In one word, the method I am about to propose may be said to consist, in principle, in inverting all this. I attach the chains for opening and closing fast to the masonry, and make fast the moving power to the gates: by this means I save all tunneling. There are but two points of application of labour for opening or closing, in place of four; and I save all need of friction rollers, and a considerable length of chain, besides so reducing the number of moving parts as to effect, as I conceive, a considerable economy both in original cost and in repairs. This arrangement is represented in detail in *figs.* 42, 43, 44.; *fig.* 42. being a plan of one of a pair of gates so fitted up; and *fig.* 44. an elevation of the gearing in a line transverse to the gates. *a a* is the top rail of one gate: *b*, the heel-post, secured to the masonry by a slight modification of the admirable method adopted by Mr. Jesse Hartley for effecting that object at the new Liverpool Docks: *c c* is the collar-strap, which takes the heel-post, secured by two screwed ends through the large block of cast iron *d d*, which is provided with two dove-tailed slots (*e e*), in which are laid the ends of the flat bar *f f*, which is of iron 4 in. × 1 in., bent round in the form shown, and let down on edge its own depth into the stonework of the hollow quoin, and leaded therein; this giving a solid and most effectual hold of the stonework, and in the best position both for it and the iron: *g g* is the gangway, or passenger platform, usually provided over lock-gates, and which in this case is made available as the situation for working the moving gear: *h h* is the handrail: *i*, the cast-iron saving-plate, or nosing, for the planking of the platform. The cast-iron brackets, or cantelevers, which sustain this platform at a height of a few inches over the top rail of the gates, are not shown, to avoid confusion in the figure. *k k* is the sill-piece of the gate, sustained by the horizontal stone arch *l l*, to which the timber is secured by copper clenched bolts (*m*); *n* is the roller plate; and *o*, the roller box and roller. The vertical rod, or socket wrench, which proceeds from the top of the bearing screw over the roller, is not shown, to avoid confusion: its object, it is well known, is to set down the roller upon the roller quadrant plate, and relieve the gate off the sill.

We now come to the new gearing. *p p* are two chain barrels, one fixed in suitable bearings at each side of each gate, and secured to it by bolting their frames and plummer-blocks back to back right through.

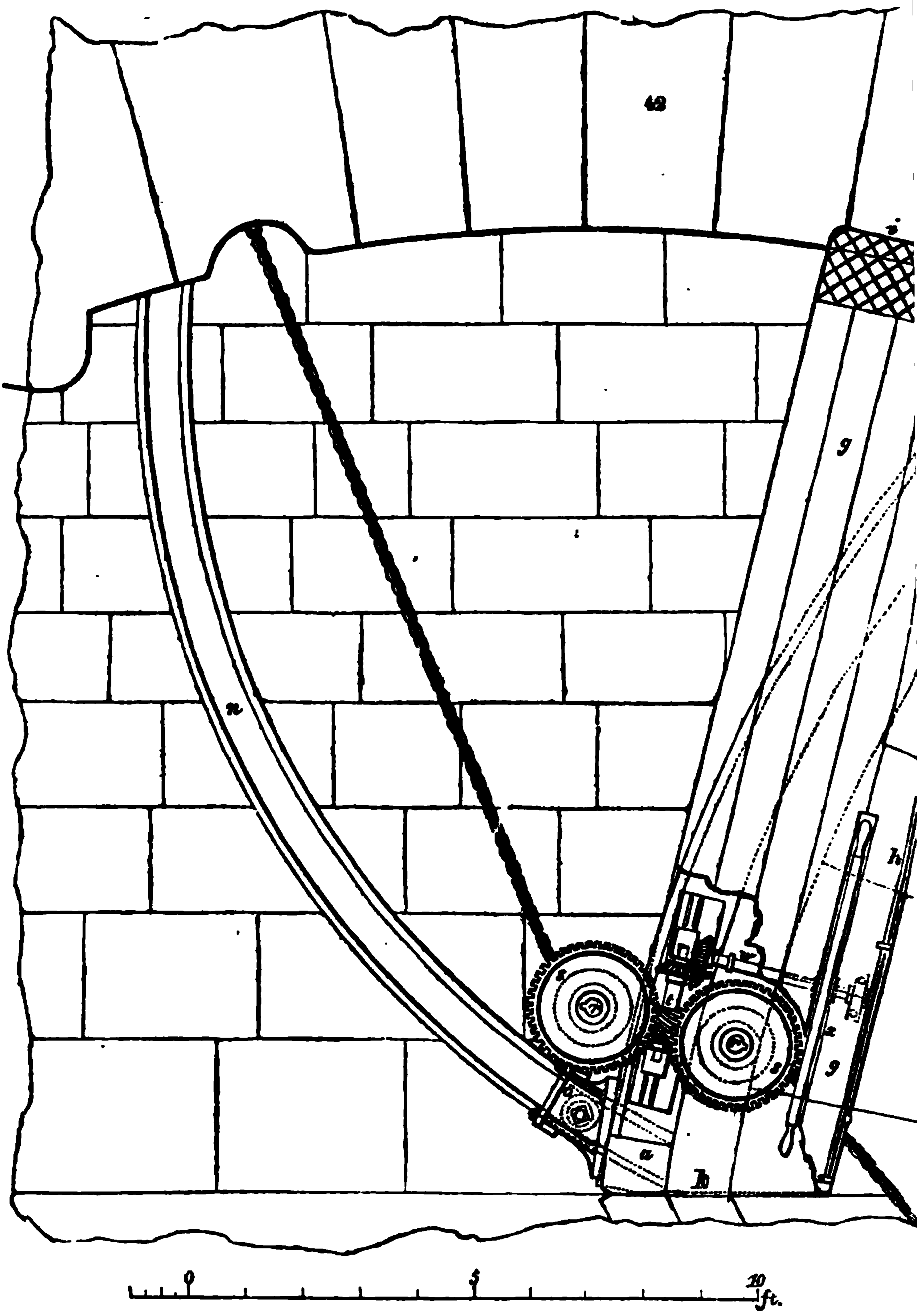
From each of these barrels proceeds an upright shaft (*r r*), secured in bearings to the top rail of the gate, and carrying upon their upper extremities each a right-handed worm-wheel (seen in section in *fig.* 43. *s*).

Between these two is placed a worm or endless screw (*t*), of such a diameter as to gear into them both; a pair of small mitre wheels (*v v*) give motion to this from a short shaft (*w*), wrought finally by a large cast-iron hand or tiller wheel (*x*), which plays down through the floor of the gangway (*g*).

One of the chain barrels is wrapped full of chain, and made fast at one side of the gate, namely, that at which the barrel is placed to the masonry; to the other barrel, which is kept empty, another chain is made fast, and secured to the masonry at the opposite side: taking much the same directions as the chains do in the ordinary crab system. It will by this time be sufficiently obvious, that, if the gates are to be opened, on turning the hand-wheel round, which is done by a man standing on the gangway, the worm-wheels, and consequently the chain barrels, will move in opposite directions; and, hence, one chain will wind up upon one of the barrels, while the other will wind off; so that the one winding up will open the gate, while the other one will slack out its chain just enough to allow it to do so. On reversing the motion, of course the gate will be closed.

It is unnecessary to enter into any investigation of the power, as it may be modified at pleasure; but I conceive the arrangement shown would give such a relation between power and resistance, that one man would cause the hand-wheel to spin round with ease, and act as a *fly-wheel;* and the power, wherever a worm-wheel is used in cases similar to the present, should be arranged so as to produce that effect.

Two worms, at right angles to the position shown, might be used; but their *thrust* would not be so well resisted as at present,


42
g
n
h
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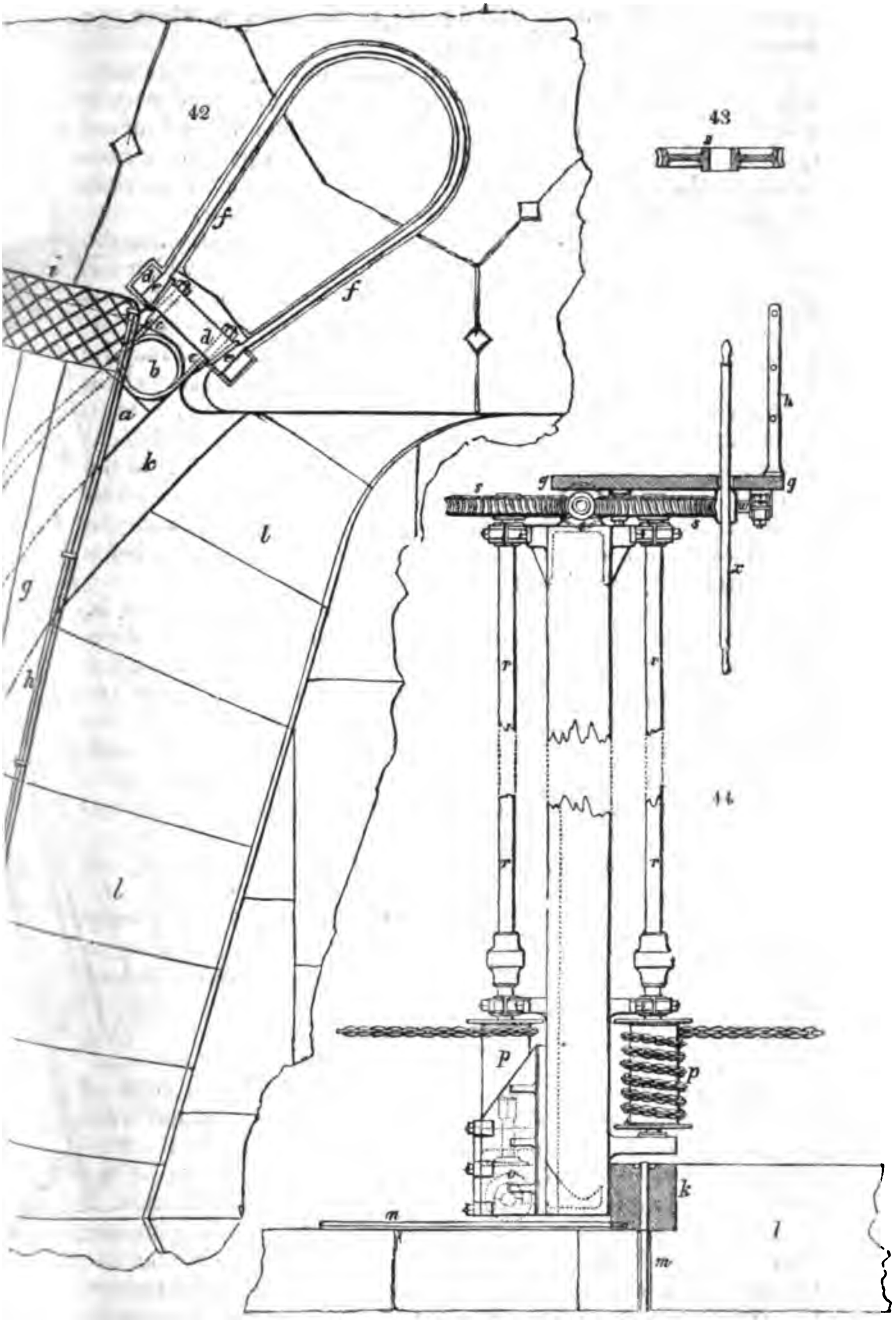
ft.



42

43

44

where it is in the line of the top rail of the gate, to which the worm-shaft bearings are secured.

To work well, this arrangement will require good workmanship in every respect; but, with the best possible execution, it will be admitted to be vastly less costly than the crab and tunnel system. The bearings of the shaft of the hand-wheel (*x*) are secured to the under side of the gangway, and the wheel rises through it to a convenient height for a man to work it.

The position of the opening chain may be such, that, when the gate is closed, it shall be the chord of the greatest arc which the gate describes: it will then be about in the best position possible. The other chain, also, should be nearly in this same direction; but its position should be such, that one gate may be fully opened, while the other is closed, without the closing chain of the open gate interfering with that which is shut. The strain upon the gate framing cannot be greater than upon the old system, as far as direct pull goes; and all internal strain from the gearing may be resolved against its own cast-iron frames. The chain barrels and vertical shafts occupy so little room, and the former are so low down, as to offer no obstruction, nor be liable to be broken by blows from ships' bows, &c.

The only objection that would appear to lie to the system is, that the chain barrels and bearings, &c., are one half of them under water, and, therefore, difficult to get at to repair, &c.: but this equally applies to the indispensable roller-boxes, and to the friction rollers, &c., in the common system. There would be no difficulty in causing the roller screws to act sympathetically with this arrangement, so as to raise the gate off the sill before opening and lower it again on closing, without the necessity of applying to a separate handle.

At present, however, many large gates are allowed always to rest upon the rollers.

Should the Institution deem any of these suggestions worthy of its notice, or likely to advance the branch of engineering to which they belong, I shall think the time and labour bestowed on them more than repaid.

94. *Capel Street, Dublin, August* 12. 1836.

Since the foregoing pages were in type, the first volume of the *Transactions of the Institution of Civil Engineers* has been published, containing an account, by Mr. Timperly, of the harbour and docks of Kingston upon Hull, communicated by the president. On looking over this article, I have observed a novel mode of construction adopted by Mr. Walker in the sluices of the Junction Dock gates; in which, by adapting the openings of the sluices to the spaces between the cross rails of the gates, and so having alternately space and rail, a large water-way is obtained, with but a small range of motion for the sluices; so that, as it is said, "one man can perform the work of two, in the ordinary way, in less than half the time. There are two sets of these sluices, placed side by side, which act contemporaneously; the original moving power being a vertical screw, wrought by an auger handle. Perhaps this is making the best of a sliding sluice that the principle is susceptible of; and such was to be expected from the design of so distinguished an engineer as Mr. Walker. I must, however, venture to retain my belief that the valves I have above proposed are far superior, in all respects, even to this best of sliding sluices; for, first, the sluices of the Junction Dock gates, as shown in plate 11. of the *Transactions of the Institution of Civil Engineers*, gave a total aperture, when open, of about 45 superficial feet, and require a range of motion of 15 in. in the vertical.

Four double-seated valves in each gate, which could be put in without injury to their strength in any way, all acting simultaneously, and moved by one man, with only a range of 9 in., would give an equal expanse.

The upper slide of each of these sluices is not exposed to much more than two thirds the entire pressure of the column of water; and, as it stands nearly one third the height of the gate from the bottom, would *spout* from 15 ft. to 18 ft. clear of the gate, supposing the water outside level with the sill; rendering this kind of sluice altogether inapplicable to canal purposes.

If the proposed valves were used, all of them would be exposed to the greatest possible pressure, until the basin or lock was quite empty; and, being close to the bottom, the water could not spout to any distance, so as to endanger wetting cargoes, or swamping small craft.

The vertical range of these sluices is 15 in., moved by a screw, which, if we suppose to be of ¾ in. pitch, will take a man at the auger handle at least a minute and a half to raise them fully, or three minutes for the two gates, and the same for closing. The principle, also, of subdividing each sluice into three increases the rubbing surfaces by *two fifths*, and adds a multitude of shackles and joint pins, &c., and other parts liable to wear and tear.

Whereas the proposed valves would be raised by one man, nearly instantaneously, and closed without any effort. They have no rubbing or bearing parts, and are scarcely susceptible of going out of order.

Comparisons are at all times, perhaps, odious; but, without making comparisons, it would often be difficult to decide between better and best. I do hope, however, and, indeed, trust, that the observations upon the Hull dock gates which I have ventured to make will have their motive rightly interpreted.

They are made with the highest respect for Mr. Walker as an engineer; and with no object in view but the matter in hand, viz. the advancement of civil engineering. — R. M.

March 14. 1837.

ART. II. *The first Christian Church.* By H. N. HUMPHREYS.

SAN GIOVANNI LATERANO, near the gate of the same name in Rome, on the road to Naples, is generally allowed to be "the first church," the first building ever publicly consecrated and devoted to Christian worship; in short, in the words of the old priest who accompanied me, *la prima chiesa del mondo.* Its claim, however, may be, to a certain extent, fairly disputed. The predecessors of the royal convert, Constantine, had occasionally, as it suited their policy, granted permission to the Christians, already a numerous and influential sect, openly to perform the ceremonies of their religion; and, during these fitful snatches of toleration, many small Christian temples were erected in Rome, which might, did they still exist, dispute the palm of precedence with the splendid Basilica Constantina. Among others, Santa Maria in Trastevere occupies the site of a deserted hospital, which Septimius Severus allowed to be used by the Christians as a church; not to mention the churches already established in the East by the apostles and their followers, which certainly would take precedence of San Giovanni Laterano.

But Rome, all-ruling Rome, was the only point from which the light of the true religion could irradiate with commanding advantage; and, until the great city became its centre, under the converted emperor, the progress of the faith had been slow and difficult, and its struggles best marked upon the page of history by a streak of blood. The miraculous conversion of Constantine shed a new and unexpected glory upon its meek and lowly followers. One of the first acts of the imperial zeal was the erection (about the year 324 of our era) of a splendid basilica, worthy of the sublimity of the faith the emperor now professed: it was raised near the spot where he was baptised by St. Sylvester, the chief priest, or pope, of the Christians; a post which had been filled, since the crucifixion of Peter under Nero, by an uninterrupted line of martyrs. This basilica, so named from the form adopted being that of the basilicæ (Roman courts of law), arose with all the splendour that the spoils of the richest buildings of Rome could afford; for, though the arts were already sunk (sculpture and painting had departed), architecture was the last to fall; and, by selecting the most superb columns, and the richest decorations of the royal palaces and public buildings, and lavishing a profusion of the rarest marbles, gems, bronzes, and gold, a structure was produced which well merited its title of *Aurea*. It was dedicated by Constantine to the Saviour; but, as corruptions and misconceptions crept into the Romish church, Catholic etiquette in the seventh century demanded that it should be placed under the protection of a saint, St. John the Baptist was the chosen patron; and the name of the Redeemer has disappeared before that of the saint. This superb edifice existed one thousand years, respected by the Gothic hordes of Alaric and Oderic, before whose destroying hands the glories of Rome faded to dust. It was at last destroyed by accidental fire in the year 1308, during the temporary residence of the popes at Avignon. Clement V. immediately despatched agents to Rome to reestablish the venerated pile; for nothing remained but a small chapel, now called the Sanctum Sanctorum, of the church from which the Christian faith had already spread over all civilised Europe. The old and adjoining palace of the Lateran, too, was destroyed, where councils had been held, and whence decrees had issued, upon which the existence and extension of the Christian religion had long depended; and where was woven that vast web of power which the mighty papacy at length cast over Europe; urging its warlike nations to deeds which, as they fade into the more distant dimness of the past, will appear more wild and fabulous than any legend of the ancient world.

The new building occupied the precise form and situation of the original; but, under the direction of the architects of the day, Gothic arches met in their elegant and fretted groinings above the gigantic Corinthian columns of Constantine, which were still left standing. But this anachronism did not, perhaps, produce a disagreeable effect, for the Gothic of Italy was unlike the Gothic of the north: a shade of the antique was still preserved in its minor ornaments, and in the almost classic capitals of its twisted columns. It had something of the Moresque and Saracenic in its lightness, which would accord much better with the Grecian columns, than the deeper and more massive Gothic of the northern countries of Europe; and it must, with the splendid additions of painting, gilding, sculpture, and drapery, of which the Romish church so well understood the effect, have been an impressive building, as, indeed, are all the Gothic cathedrals of that age: but it is now Gothic no more. In the reign of Innocent X. it had become, in part, ruinous; and the columns of the principal aile were deemed too slender for the support of the roof, or, rather, the rage for modernisation was then in the height of its career of destruction. The beauties of the Greek and Roman architecture had, after the long slumber of art in the dark ages, begun to be justly appreciated; and that appreciation, in the course of a century or two, became a rage:

not a Gothic church in Rome could be left to the repose of the rich twilight of its painted windows, shedding

> "A dim religious light;"

and, as Walpole, or some one else, said, "They built the modern churches of Rome with the money extracted from the devotion inspired by her Gothic ones." San Giovanni Laterano shared the fate of the rest: its pointed windows and groined roof were abominations no longer to be tolerated in an academic age; and, to aid the general metamorphosis, even the noble columns, almost the only remaining relics of the basilica of Constantine, were concealed in encasements of stucco pilasters, from which spring the arches of its present roof; but Borromino, in his model, though he has destroyed a thousand of the deepest associations of the spot, has produced a noble architectural *ensemble*. In each mass of his encasements he has inserted a deep niche, in which now stands the colossal statue of an apostle; and the perspective, from the grand entrance, looking towards the altar, is very fine. This series of gigantic statues, the works of some of the greatest sculptors of the sixteenth and seventeenth centuries, is one of the wonders of Rome. Well might Roubiliac express his astonishment at the colossal works of Bernini and others, if he saw these. I think it is Hazlitt who relates of him, that, upon his return to London, he hastened to Westminster Abbey to compare the impressions he had received with his own celebrated works; but that he soon rushed out of the building, exclaiming to a friend, "Egad, Sir, they looked like tobacco-pipes!"

The principal altar is the one erected by Clement V., and is almost the only bit of Gothic remaining, producing a *bizarre*, though not disagreeable, effect. It is a sort of pavilion, covered with gilding and painting, and stands in the centre of the cross formed by the intersection of the transverse aile, in the upper part of which, in urns of silver, are preserved the heads of St. Peter and St. Paul. Many alterations and additions have been made to the church by various pontiffs; but none have either enlarged or curtailed the original limits of the ancient basilica; so that, if this is not the first church itself, it is on nearly the same piece of ground; and one must be callous indeed to the softer and venerating emotions of the heart, not to feel a solemn impression creep over the mind, as we stand upon the spot whence the faith in which we take so solemn and so deep an interest first emanated, to humanise and save a savage world. This is, indeed, "the rock" foretold to Peter, upon which he founded his church, and where the sandals might, indeed, be taken from the feet in reverence; for we "stand upon holy ground." Had I lived in the time of Luther, I should have had my scruples in dissenting from the Catholic, the universal, church of Rome, despite its abuses and corruptions; and even now, staunch Protestant as I am, I could scarcely help regretting that I had no right to kneel or pray at this venerable shrine; and felt hurt when the old priest observed that, as a Lutheran, I could feel but little interest in what he was describing to me. I defended myself from this aspersion, and so warmly, that I believe I crushed at once the hopes my companion had been forming respecting my conversion.

From these reflections, and my theological discussion with the old priest, I was aroused by a long description, given by a young attendant, of the celebrated bronze columns of Augustus, which decorate the altar at the top of the aile. This altar was put together by the architect Paulo Olvieri, who employed in it four very beautiful columns of the green marble called serpentino, and the celebrated columns of fluted bronze, discovered in an accidental excavation at the Capitoline Hill, which were proved beyond a doubt to be those cast, by order of Augustus, from the "spolia opima" taken at Actium, and which were originally placed in the Temple of Jupiter Capitolinus. How far these trophies of pagan warfare are in keeping with the altar of a Christian church, is a question I will not attempt to decide; but I confess I think they would have been better placed in the museum of the Vatican. This may appear a fastidious remark from an Englishman, accustomed to see the blood-stained banners of the American war floating in the dome of St. Paul's; but I never could bear to see those emblems of triumphant war paraded in such a place; and, as I have watched them fluttering at the peal of the organ, torn and disfigured as they are by the sword, the grape-shot, and all the dread *matériel* of death, I could not help exclaiming, "What have such things to do in a temple where the word is preached which inculcates 'peace and goodwill to all mankind?'" To return: the soffit above is filled by a fine mosaic, with figures of colossal size, executed, in part, by Gaddo Gaddi, a Florentine, about the year 1290, and in a simpler and more noble taste than most efforts in the arts at that period. A more curious specimen of this art is preserved in a sort of tribune, built for the purpose, outside the church, being one executed by order of Honorius, but a short time previous to the final fall of Rome. It is a curious and interesting specimen of the period when mosaic was the only branch of the fine arts, once carried to so high a pitch in Rome, that still breathed at that dark and troubled period. It was one of the few relics of the primeval church that escaped the conflagration; and the image of the Saviour which it contains, which is said by popular tradition to have been executed at the time of the original dedication of the temple, is held in the greatest veneration by the people of Rome. Adjoining the church I was introduced into what my guide called the cloister of Constantine, "*el chiostro di Constantino;*" but which, independently of the simple fact that no monkish orders existed in the time of Constantine, and that, consequently, there could then be no cloisters, is of a style and beauty that sufficiently prove it to be a work of the thirteenth or fourteenth century: most likely an addition made at the rebuilding of the church in 1308; for many beautiful portions of friezes of antique workmanship appear in its construction, the remains, probably, of the papal palace adjoining, which Constantine prepared for the bishops of Rome, when he built the church. But these are antiquarian researches, which I must leave to those who have more time, knowledge, and perseverance. This cloister, with its clusters of twisted columns, and low scalloped arches, was quite refreshing after the classical flourishes of Borromino; and, lulled by the gently dripping fountain that rose, shaded by orange trees, in the centre of the court, I could have spent many hours indulging in the meditations to which the locality gives birth. But this remnant too will, I fear, soon find its Borromino; and, unless the spirit, so rife in the north, for the racy chronicles and quaint carvings of the middle ages travel south in time to save it, some modernising but sacrilegious touch will destroy its interest for ever. Here are preserved some interesting relics, brought at various periods from the Holy Land: some by Constantine himself, and some by his devout mother, the canonised St. Helena, which may be at least supposed genuine; for, at the time of their removal to Rome, scarcely three centuries had elapsed since the events they illustrate took place: and others, the offerings of the crusaders of later times, which are almost all that modern nations have to show, for the enormous sacrifices of blood and treasure made by their ancestors in their fanatic expeditions. Among others, are two columns, evidently of Syrian workmanship, said to have formed the entrance to the house of Pilate. Another column, elaborately carved in a similar style, and most singularly divided, as by a single blow, from the summit to the base, is venerated as one of the phenomena which took place when that awful and unnatural darkness occurred at noonday, and "the vail of the temple was rent in twain." There is also the mouth of a well in one piece of marble, said to be the one at which passed the scene of the woman of Samaria. It is evidently of Eastern and very ancient sculpture; and, as the deep furrows worn in the sides by frequently descending ropes sufficiently attest that for ages it must have served as the mouth of some much frequented well, no good reasons can be assigned that it is not the actual well in question. The Jews, even after the last final catastrophe, took very little interest in the stupendous events which had occurred in their land, and were not at all likely to remove any of the objects which had acquired no additional value in their eyes from the scenes which had passed in their precincts. After the complete humiliation of the Jews by Titus, they remained quietly enough under the yoke of the Romans, forming an integral part of the then well-cemented and well-governed Roman empire; and nothing could be more easy than for Constantine, in the newness of his zeal, to remove any object illustrative of the sacred history, which the Christians of the churches of Asia Minor would not fail to point out to him. I have been led into this digression, from the absurd incredulity with which most of my countrymen regard all relics of this description. I am not disposed to the adoration of relics; but I cannot but feel a deep interest in remains which carry the imagination so vividly back to that age of miracles. I cannot sympathise with the feelings which lead persons to venerate perhaps a portion of the body of some canonised bigot or martyred enthusiast; but there are relics (and what is the doomed Jerusalem itself but a relic) which, in occupying the imagination with, and riveting the attention on, the great truths contained in the Holy Scriptures, must aid in fixing the faith of many a wavering Christian. All is venerable that belongs to the past, even though no historic fact, no poetic legend, no glorious association, is attached to it: a sculptured fragment, the work of hands that have passed away and mouldered into dust, is venerable. It teaches us that our own times will soon, by new generations, be called "the past;" and a noble ambition arises in the breast, with a longing to do something not to be forgotten. Let us share, as we repeat, the noble fear of Dante: —

> "Temo di perder' vita tra coloro,
> Che questo tempo chiameranno antico!"

London, March, 1837.

Art. III. *On the interior Arrangement of Churches.* By Selim.

There are some sensible observations on church architecture, in an article on the principles of design, by Mr. Sopwith (Vol. II. p. 393.), which deserve the attention of architects, and others who are connected with the erection of new churches. I agree in Mr. Sopwith's opinion, that, in many of our modern churches, the principle of fitness has been too much sacrificed to a prejudice in favour of the original form of such buildings; and, though I strongly partake of this prejudice myself, I think he argues justly, that a church adapted to the Roman Catholic mode of worship may not be the best model of a Protestant church. But could not the original form be more properly adapted to the Protestant mode of worship, than it is in many of our modern churches? There is certainly good reason for asking this question, when, as Mr. Sopwith states, there are new churches in which some of the congregation are placed under the pulpit floor, and others in a situation where they may lean over the preacher's shoulder, and read out of his book. I have myself noticed as great absurdities in modern churches: indeed, there is one in my own neighbourhood in which the communion table is placed under the floor of the pulpit, which, with the reading-desk and the clerk's desk, stands within the rails. The font stands just without the rails; and so little space is allowed either within or without the rails, that it seems almost impossible to administer the sacraments with becoming reverence. We have no examples of such an inconvenient arrangement in our old churches, and it is inexcusable in a new one. Mr. Sopwith observes that the division of a church into ailes, by pillars and arches, is not suited to a Protestant place of worship, in which all the congregation should look towards the minister, and be within hearing of his voice. Certainly pillars are, in many cases, very much in the way; and, perhaps, a building like Westminster Hall would be the best model for a Protestant church. Many old churches and chapels are, indeed, nearly of this shape, with roofs unsupported by pillars; but I presume such roofs are much too costly for modern times. There is, however, the ancient form of the Latin cross, which may, I think, be adapted to the Protestant worship; and a church constructed in this shape, having the nave and transept wider than ancient examples warrant, and the nave without side ailes, would afford the advantage of placing all the congregation within sight and within hearing of the minister. In a church of this form (see *fig.* 45.), nearly the whole nave might be occupied with free seats, and the pews would be in the transept. A gallery at the west end would contain the schools and singers, under which, on one side, would be the stairs to the tower and gallery; and on the other side would be an open space for the font, in its proper place near the door; and the first story of the tower would form the porch. In such a church we might retain much of the ancient form, and still have what we require in a Protestant place of worship. If the pulpit stood near the chancel arch, and there were *no square pews*, all the congregation would look towards the minister, and would be within hearing of a moderate voice; and I am not aware that any pillars would be necessary, unless to support the roof of the nave at its junc-

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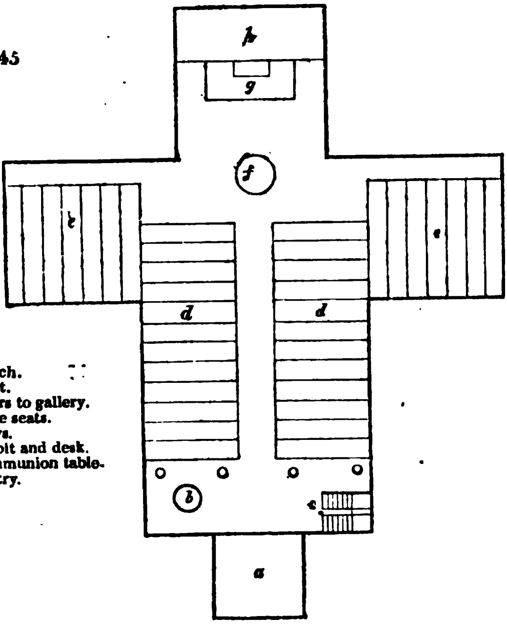

a, Porch.
b, Font.
c, Stairs to gallery.
d, Free seats.
e, Pews.
f, Pulpit and desk.
g, Communion table.
h, Vestry.

tion with that of the transept. Two slender shafts would be sufficient for this purpose, and would not be much in the way. There is a point connected with church-building which should, I think, be borne in mind by architects; that is, to prepare in the original edifice for any future additions that may be requisite. We have seldom funds to build a larger church than is required for the present population of a parish; but it is desirable to afford facilities for subsequent additions, when an increased population requires accommodation. This might be done by building arches in the outer walls, in those situations where it would be convenient to add to the fabric. The arches might be so managed as to be scarcely observed in the plain surface of the wall; and, if the windows were placed within them, additions might be made without disturbing the first building. Suppose a church in the form of a simple parallelogram, with arches built in the east end and in the sides. A small increase in the population of the parish might make it desirable to add a chancel, when the eastern arch would come into use. The pulpit and desk might then be removed under the arch, and several additional sittings would be given to the congregation. Subsequently, as occasion required, half a transept, or a whole one, or side ailes, might be added, and all without disturbing what had been previously erected. I am aware that the suggestion applies chiefly to the case of small churches, in parishes where the population is increasing; and I think it would be wise to adopt this practice in every new church upon a small scale; for our population increases so rapidly, and so capriciously, that what is now a small village may become a large one in the course of a few years. It would certainly be a means of saving much expense, and would prevent the destruction which is usually occasioned by any addition to a church. If architects object that this is a clumsy expedient, I answer it may be so, but it would be a means of facilitating the enlargement of churches by saving expense; and there are many cases in which churches have not been enlarged, because an addition might lead to the rebuilding of a great part of the old structure. It has also this recommendation, that it gives the architect some control over any future additions to his design; as, having provided facilities for additions in particular situations, they would, of course, be made use of to save expense. I believe Wren saved the tower of the church at the foot of London bridge from mutilation or destruction by the use of this expedient.

March, 1837.

Art. IV. *On Competition in Architecture.* By Y.

Many remarks have already appeared, at various times, in this Magazine on the subject of competition; but it is so important a one, that it cannot be too frequently pressed upon the attention both of professional and unprofessional readers, until some of the monstrous defects and absurdities attending the present system shall be corrected.

In most of the advertisements I have lately noticed, inviting architects to send in designs for buildings about to be erected, the time allowed for the purpose is most unreasonably, even absurdly, short—in many cases, only a fortnight from the very day on which the advertisement appears; which would, in general, be barely sufficient to make the requisite drawings, after all the preparatory studies and sketches had been sufficiently matured; and that, too, supposing an architect could devote the whole of the time allowed to that labour alone. Hence study, or even correction, is entirely out of the question on such occasions. The very first ideas that happen to occur must be laid hold of and adhered to, for better or worse; since, should any material improvements suggest themselves during the progress of the drawings, there is no leisure for adopting them.

What, in the name of common sense, can be the motive for such worrying hurry and precipitation, such race-running against time, in a matter where ample opportunity should be allowed for deliberate consideration? Does not the very fact of such preposterous despatch being demanded, prove of itself that those who impose it are so utterly ignorant as not to be aware that the making out the fair drawings is the least part of preparing a design, that is, if there be anything at all in it worthy to be so called, and more than merely putting together the most stale and hackney commonplaces. Such being the case, the very idea of sending in drawings to patrons of that stamp is sufficient to damp any architect of talent or spirit. Advertisements from such exacting task-masters are almost anything but invitations; for they do little more than appeal to the very needy and wholly unemployed; and even they, when they enter upon the work of drudgery, must feel all the while just as comfortable as if wrapped up in a wet blanket, notwithstanding the prospect of obtaining, should they chance to prove successful, the magnificent premium of TEN GUINEAS! Miserable economy, and most miserable system of proceeding altogether!

If longer time cannot be allowed, nor higher premiums offered, it would, at least, be but reasonable to ask only for sketches, and general ideas, finished drawings to be afterwards furnished by the author of the accepted design; whereas, according to the conditions now enforced, such competitions may not unjustly be characterised as injurious to architecture, being tantamount to a demand for crude, ill digested, hurriedly vamped up drawings, and mere patchwork of the most commonplace stuff. — Z.

ART. V. *Candidus's Note-Book.*

Fasciculus VI.

> "Sicut meus est mos,
> Nescio quid meditans nugarum; et totus in illis."

I. IT is curious to what exceedingly vulgar ideas a certain class of would-be fastidious critics and objectors betray, in making depreciatory comparisons, which generally confirm the justness of Swift's clever remark respecting nice people. Even Beckford himself condescends to liken narrow Saxon windows to marrow spoons, a fancy more greasy than graceful; another critical wight finds out that the Bauschule, or architectural college at Berlin, very much resembles a sugar house! and we can all remember the exceedingly dull and stupid jokes, the pothouse pleasantries and platitudes about the "extinguisher" of the church in Langham Place; and the egg cup over the garden front of the New Palace. With the same felicity of facetiousness the dome of the Bank of Scotland, at Edinburgh, has been termed a "pincushion:" and the Scagliola columns in some of the apartments of the New Palace have been asserted to look like so many glasses of strawberry and raspberry jam; and had they been of porphyry, they would, doubtless, have been compared to blood puddings. For my own part, I only wonder that no one has yet discovered the dome of St. Paul's to be nothing more than a huge basin, turned upside down; and the monument to be only a gigantic candlestick, with a bronze flame in its socket; nay, the moon might be mistaken for a silver salver, or, perhaps, only a plated one; and the "great globe itself" has the misfortune to be shaped like a plum pudding.

II. After the exceedingly illiberal sneering to which amateurs have of late been subjected, it is some satisfaction to meet with anything approaching to an admission that their zeal is not uniformly of a mischievous kind. "The author of an able critique of architecture, in the *Foreign Quarterly Review*," says Mr. Hopper, in his recently published *Letter to Lord Duncannon*, "has demonstrated incontrovertibly some of the true principles of the art, and has shown the advantage that might be derived from the support of amateurs. But it must be from the amateur who by his love for the art, knowledge, and good taste, is enabled to judge correctly of the works of others, and not from an amateur who, mistaking his own abilities, becomes a practitioner, and attempts to work with other men's tools; for, as his notions of composition consist in making selections and obtaining ideas from the works of others, he must necessarily be jealous of those whom he cannot rival." What is here observed is, undoubtedly, very true, because it amounts, in fact, to little more than a truism. Undoubtedly there are coxcomb amateurs, shallow pretenders, stupid busy-body patrons, persons who, consequently, do more harm than good, wherever they interfere. These, and they are not peculiar to architecture, I do not wish to countenance, any more than I would dull plodding empirics in the profession, who style themselves architects; but I see no more reason why the name of amateur should be brought into disrepute, and made almost a byword of reproach, as it has been in several recent instances, than that the name of architect should be considered, from the writings of some of its professors, as nearly equivalent to charlatan. Whether a mere amateur, or a professional practitioner, a blockhead is still a blockhead; with this difference, however, that in the former case his pretensions serve chiefly to make him ridiculous, while in the other capacity he may frequently impose upon those who are unable to detect his deficiencies. Such a one, besides, is infinitely the more likely of the two to be "jealous of those whom he cannot rival, as his notions of composition consist in making selections and obtaining ideas from the works of others, if not in pirating by wholesale from *Stuart's Athens*, and other publications of that description. The private amateur, on the contrary, can hardly be open even to the suspicion of any such feeling, rivalry between him and the professional man being almost entirely out of the question; at least it can take place only in exceedingly rare cases indeed; when, for instance, the amateur assumes, as did the Earl of Burlington, the character of the professional man, wherein, by the by, that nobleman acquitted himself with some éclat, although in the present day he would be in danger of incurring obloquy. Not only would it be more liberal, but, perhaps, quite as politic, on the part of the profession, if they were henceforth to desist from taunting amateurs in a manner that looks not very much unlike a jealous dread of them. Far from having anything to fear from them, the accomplished architect will rather look to them as those who can best estimate his talents, and the merit of his productions, and make allowances for the difficulties he has had to contend with; the mere copier, on the contrary, has some reason to dislike a class of persons who, if they have really qualified themselves for the character they assume, can detect his insufficiency, although it may be quite safe from the multitude.

III. Charlatanism, it would seem, is to be met with, not among amateurs alone, but in the foremost ranks of the profession itself. In an article that lately appeared in *The Age* newspaper, some one, at least, has ventured to tax Mr. Barry with it, and that, too, in the most direct and plainest terms, styling him "an architectural charlatan"!! yet even his most hostile rivals will hardly thank the writer for what he has done, because people will be apt to ask, If Barry be a charlatan, what are all the rest?

IV. A great deal of matter, bearing either directly or indirectly, upon architecture, lies scattered about through a multitude of volumes and publications, where few think of searching for it; or, if they do, must search long before they hit upon it. Indeed, I have frequently wished that some one, loungingly industrious, would busy himself in compiling a *Directory*, systematically arranged, informing us where such detached *morceaux* might be instantly discovered. There is, for instance, one of the fullest architectural descriptions ever penned, namely, that of the palace of St. Michael at St. Petersburgh, hidden where, without the aid of a divining rod, it would never be suspected, viz. a work by Kotzebue, entitled *The most remarkable Year in my Life*. Many valuable bits, both of description and criticism, might also be ferreted out of holes and corners, where they are now detected only by accident. The following scrap, which contains some clever remarks, cleverly expressed, is one of the kind one would be sorry to miss.

"French châteaux are decidedly bad things; stiff, unwieldy, and without any pretensions to architectural beauty, or even to that of irregularity, the next best thing to perfect symmetry, and a much better thing, generally speaking, as connected with picturesque effect. Exact and corresponding proportions give a noble and beautiful appearance to a building of vast dimensions and high appropriation, and the uniform aspect of parallel wings, a roof evenly sloped, and walls equally tinted, create ideas of order, sufficiency, and quiet, which harmonise well with peaceful agricultural scenery, or the sober monotony of a wide level; but projecting and retreating lines, time stains, the gallery added, or the chamber thrown out, as increased means or numbers make such ekings out luxurious or convenient, are much quicker helps to the imagination." (*Slight Reminiscences of the Rhine, &c.*)

V. In his *Reply to Fraser's Magazine*, Pugin makes matters in some respects worse than before, by classing James Wyatt along with Batty Langley; and, also, by attempting to justify the severity with which he spoke, in his *Contrasts*, of architects, and the state of architecture at the present day in this country. It is to be regretted he did not inform us whether he considers modern degeneracy to be confined to England, or to extend to other countries, because that would have assisted us in judging how far he is correct in ascribing the deterioration of architecture he so loudly laments chiefly to protestantism.

VI. An idea for forming artificial gardens in confined spaces at the back of houses in town, was once started to me by a friend, which I consider too good to be lost, although it may startle many, at first, as an extravagant absurdity. It was, to have branches of plants and flowers, moulded in earthenware, and painted of their natural colours, but unglazed, and afterwards affixed to real stems, planted either in beds or pots. These would produce a lively and cheerful appearance, as seen from the window of a back parlour, and would constitute a perennial garden in full bloom at all seasons, and let the situation be what it might; while, during the summer, pots with real shrubs and plants, might either take place of, or be intermixed with, the others. Nor, were the practice adopted, and manufactories for the purpose established, would the expense of such artificial plants be very great, at least not for a sufficient quantity to make a decent show, and screen dead walls; because, being intended to be seen only from a distance, they would not require to be nicely finished or coloured, nor to have more pains bestowed on them than would suffice to produce the desired effect, so that they might be manufactured by children. "Still," cries an objector, "it would be mere make-believe." Certainly: so is gilding, or painting in imitation of grained woods; and I admit that it would be supremely foolish for any one to put himself to the expense of such a deception, if he were equally well satisfied with having before his eyes a forlorn looking, dingy yard, styled by courtesy a garden, with a few leafless and stunted plants stuck in it. Nay, after all, whether absurd or not, that something of the sort has already been practised with tolerably good effect, may be learned from the publication I have already quoted, and which deserves to be quoted again. "The Italian taste in chimneys," says the author of *Slight Reminiscences*, "is peculiarly elegant, no matter how mouldering, raw, or staring the house may be, there is always something graceful and redeeming about this generally frightful utility. We stepped out from the show apartments of the Palazzo Brignoli, at Genoa, on a spacious terrace, which constitutes the roof of another part of the building. The chimneys were placed at regular intervals, each having the form of a column, ornamented with trophies, and terminated by a vase, containing an aloe, or something that looked like one. The effect was so good that we believed them to be merely decorative, until our cicerone pointed out to us a light smoke issuing from the centre of the leaves." If, therefore, a deception of that kind was allowable, there would hardly be anything very extravagant in one that would not be quite so much at variance with *vraisemblance.*

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(*Continued from* Vol. III. p. 318.)

"INDUCED by such a special protection of their pontiff, the Romans themselves soon, in great numbers, joined these masonic associations, particularly where destined specially to accompany into yet unexplored regions the missionaries deputed by their chief. And as the exarchate of Ravenna, first detached from the Greek empire by the Lombard kings, had already, by Pepin, been transferred to the Popes, before the chief part of the kingdom of Lombardy was, by Charlemagne, annexed to his own empire; as the relationships of trade, and other intercourse of the different cities of Lombardy with Constantinople, brought daily to them a greater number of Greeks; and as, finally, the political factions of Constantinople, and above all, the fury of the Iconoclasts, continued to cause a constant influx of Greek artists into Italy; many Greeks were likewise taken into the gradually increasing circle of their lodges.

"At a later period, indeed, when civilisation diffused itself more distantly, even natives of the countries north of the Alps — of France, Germany, Belgium, and England — gradually gained admission into these bodies; perhaps only lest they should otherwise obtain the assistance of their own natural sovereign in a dangerous competition. In fact, during those middle ages, in which the laity were employed in little else than constant feuds and warfare, or servile or military services to those engaged in it — when the church was the only place of refuge for those who wished to exercise the arts of peace and ndustry — when even those arts of the latter description, that had not the recommendation of peculiar holiness, were most familiar to monks, and members of religious orders — it need not excite surprise that an art, so peculiarly connected with every branch of religion and hierarchy as that of church architecture, should become, in every country, a favourite occupation with its ecclesiastics. These, therefore, were especially anxious themselves to direct the improvement and erection of their churches and monasteries, and to manage the expenses of their buildings, and became members of an establishment which had so high and sacred a destination, was so entirely exempt from all local civil jurisdiction, acknowledged the Pope alone as its direct chief, and only worked under his immediate authority, and as his own immediate ministers; and thence we read of so many ecclesiastics of the highest rank — abbots, prelates, bishops — conferring additional weight and respectability on the order of freemasons, by becoming its members — themselves giving the designs, and superintending the construction of their churches, and employing the manual labour of their own monks in the edification of them. Indeed, in countries on this side the Alps, when civilisation increased, their own sovereigns seem to have taken a pride, and seen an advantage, in conferring upon their native lodges of freemasons, honours and privileges equal to those derived from the general religious head of Christendom — the Pope. The beauty of the construction of Strasburg Cathedral not only caused the lodge of freemasons of that city to be, in 1458, by all the other German lodges of Russia, Swabia, Bavaria, Franconia, Saxony, Thuringia, and others, by a solemn act passed at Ratisbon, recognised as their head; but occasioned that act to be, in 1498, solemnly ratified and confirmed by a diploma given at Strasburg by the Emperor Maximilian the First.

Often obliged, from regions the most distant, singly to seek the common place of rendezvous and departure of the troop, or singly to follow its earlier detachments to places of employment equally distant; and that at an era when travellers met on the road every obstruction and no convenience, when no inns existed at which to purchase hospitality, but lords dwelt every where, who only prohibited their tenants from waylaying the traveller, because they considered this, like killing game, one of their own exclusive privileges; the members of these communities contrived to render their journeys more easy and safe, by engaging with each other, and perhaps even, in many places, with individuals not directly participating in their profession, in compacts of mutual assistance, hospitality, and good services, most valuable to men so circumstanced. They endeavoured to compensate for the perils which attended their expeditions, by institutions for their needy or disabled brothers; but lest such as belonged not to their communities should benefit surreptitiously by these arrangements for its advantage, they framed signs of mutual recognition, as carefully concealed from the knowledge of the uninitiated as the mysteries of their art themselves. Thus supplied with whatever could facilitate such distant journeys and labours as they contemplated, the members of these corporations were ready to obey any summons with the utmost alacrity, and they soon received the encouragement they anticipated. The militia of the church of Rome, which diffused itself all over Europe in the shape of missionaries, to instruct nations, and to establish their allegiance to the Pope, took care not only to make them feel the want of churches and monasteries, but likewise to learn the manner in which the want might be supplied. Indeed, they themselves generally undertook the supply; and it may be asserted, that a new apostle of the Gospel no sooner arrived in the remotest corner of Europe, either to convert the inhabitants to Christianity, or to introduce among them a new religious order, than speedily followed a tribe of itinerant freemasons to back him, and to provide the inhabitants with the necessary places of worship or reception.

"Thus ushered in; by their interior arrangements assured of assistance and of safety on the road; and by the bulls of the Pope, and the support of his ministers abroad, of every species of immunity and preference at the place of their destination; bodies of freemasons dispersed themselves in every direction, every day began to advance further, and to proceed from country to country, to the utmost verge of the faithful, in order to answer the increasing demand for them, or to seek more distant custom.

"Wherever they came in the suite of missionaries, or were called by the natives, or arrived of their own accord to seek employment, they appeared headed by a chief surveyor, who governed the whole troop, and named one man out of every ten, under the name of warden, to overlook the nine others, set themselves to building temporary huts for their habitation, around the spot where the work was to be carried on; regularly organised their different departments; fell to work; sent for fresh supplies of their brethren, as the object demanded them; often made the wealthy inhabitants of the neighbourhood, out of devotion, or commutation of penance, furnish the requisite materials and carriages, and the others assist in the manual labour; shortened or prolonged the completion of the edifice as they liked, or were averse to the place, or were more or less wanted in others; and when all was finished, again raised their encampment and went elsewhere to undertake other jobs.

"Even in England, as late as the reign of Henry VI., in an indenture of covenants made between the churchwardens of a parish in Suffolk, and a company of freemasons, the latter stipulate, that every man should be provided with a pair of white leather gloves and a white apron; and that a *lodge*, properly tiled, should be erected at the expense of the parish, in which to hold their meetings.

"The architects of all the sacred edifices of the Latin church, wherever such arose — north, south, east, or west — thus derived their science from the same central school; obeyed, in their designs, the dictates of the same hierarchy; were directed in their constructions by the same principles of propriety and taste; kept up with each other, in the most distant parts to which they might be sent, the most constant correspondence; and rendered every minute improvement the property of the whole body, and a new conquest of the art.

"They never found, to any experiment, the least opposition in the predilections or prejudices of employers, too devout to contend with the holy warrant they possessed: the result of this unanimity was, that at each successive period of the masonic dynasty, on whatever point a new church or monastery might be erected, it resembled all those raised at the same period in every other place, however distant from it, as much as if both had been built in the same place, by the same artist. In fact, in regions which had remained longer uncivilised, and destitute of important edifices of any description, and where Christianity was adopted, and the want of their construction felt more tardily, and could less be supplied from the wrecks of former fabrics, though sometimes very remote from each other, the similarity of style, at certain subsequent periods, became even more striking than it was in the earlier foci of civilisation and Christianity. For instance, we shall, at particular epochs, find churches as far distant from each other as the north of Scotland, and the south of Italy, more minutely similar than those erected within the single precincts of Rome or Ravenna. Thus, at each different successive period subsequent to the general establishment of the Latin church throughout the west and north of Europe, we shall not only find in the region where it reigned over their entire surface, one single sort of architecture; but again, that after this Latin church had once, in these regions, been universally established, at whatever subsequent period there happened to be, in the sacred architecture, either at its fountain head, or on any other point, any improvement or change, the knowledge and the adoption of the same reached every other point so rapidly, as almost to appear every where the effect more of a general simultaneous inspiration, than of a progressive advancement and circulation. Hence it is most difficult to trace the first birthplace of any novelty by the difference in the successive eras of the various places more or less distant from it, where the change might successively appear. Hence the rapidity with which changes were adopted in every building — whether only beginning, or in its progress, or even when already in the last stages of its advancement — presented the most singular contrast with the slowness of the general progress of many buildings, and the number of years, nay centuries, they often took in completion. This circumstance, indeed, might contribute to cause the delay; since much that had been done, was perhaps undone again, in order to be re-modelled after the new fashion: but this fact appears tolerably certain—that while every new style, introduced since the establishment of freemasonry, may be attributed to, and claimed by, that body collectively, yet, having spread all over Europe, as it were, only from one single common point, having kept its inventions throughout the whole extent of its operations in common, and being composed of men of all countries uniting their experience and their talent — no new style arising at that period can, in any of its peculiarities, be claimed as the exclusive progeny of any of the more distant countries to which its ramifications extended, even though it might be incontrovertibly proved that that country possessed not only the first, but the only specimen, of that peculiar style.

" As, of those masonic bodies, each member had a certain weight in the general meetings of the chapter, and, to a certain degree, followed his own private impulse; it arose on the other hand that, while each of the essential mechanical parts of each building observed that connection with the rest, that subservience to the general design so indispensable to the durability, to the very completion, of the edifice; the more arbitrary ornamental parts, which might each by its different artist be executed according to his own fancy, or desire of distinction, and without danger to the stability of the fabric, preserved so little unity or similitude, that, in most buildings, bases, columns, architraves, *basso relievos*, cornices, and other members, often offer a diversity equal to that of the number of individuals employed upon them.

" In many countries, and in each country, many bodies and individuals, wanted at once to erect religious edifices, and made them the object of a vanity so excessive as to vie all over Europe for the superiority, and to devote all the means which the absence of other pursuits left them, to the attainment of that single one object. Hence many artificers were at once engaged, and enabled to devote their faculties without interruption to the cultivation and perfection of that single study; and any talent which an individual might possess, any discovery which he might make, was contributed to the general stock. Hence each freeman, being enabled to benefit by the skill and experience of all the rest; each feeling stimulated to emulation by the attention of his fellows; and meeting in the execution of his design, none of those checks from the ignorance or prejudices of their employers (great as they might have been), to which later artists have been exposed; it occurred that, precisely in those periods of the profoundest general ignorance, when other much easier arts only made slow advances, the most difficult and complicated art of sacred architecture —that of calculating the various weights and pressures of arches most stupendous, and the supports and resistance these required; and the forms which the arches, and the pillars, and the buttresses, and pinnacles, supporting and compressing them, and the stones composing these members, should have, for the purpose of perfect solidity and cohesion — acquired a perfection so great, so contrasted with the general ignorance which existed in all other things, so superior even to that science in the same objects displayed at this moment, when in all other arts it has become infinitely greater, that it could not be credited, did not the proofs subsist in the works of those ages still extant.

" But, because the freemasons, like all other craftsmen, confined to a peculiar exclusive corporation the knowledge of their original craft, and its successive improvements, for the purpose of securing to themselves its exclusive benefits; made them a profound mystery from the public at large; and only initiated into them those intended to be aggregated to their body, most slowly and gradually, and under oaths of the most profound secrecy; nay, carefully concealed, or even destroyed, whatever calculations and working plans might tend to elucidate and divulge their method; it also has happened that, though they have produced general witnesses to their skill, so admirable and so numerous in their works, they have left behind them very little that, after their dissolution, might assist to instil and to perpetuate among others the scientific principles upon which they proceeded. As soon as, in different countries, a general increase of learning, of industry, of skill, of jealousy in the native sovereigns, of the intrusions of foreigners, to the disparagement of their authority, and the detriment of their subjects, and a general corresponding diminution of the papal influence, and of the foundations arising out of it, and of the support given by it to freemasonry, caused the bodies of freemasons every where successively to dissolve, or to be expelled, until they at last ceased to exercise their original profession, and nothing remained of them but an empty name, and organisation, and formulary, which other men laid hold of and appropriated to themselves to carry on and conceal other purposes, no trace or tradition of their peculiar principles or method continued to be preserved.

" Some historians fancy they find symptoms of freemasonry as early as the seventh century, and that a peculiar masonic language may be traced as far back as the reigns of Charlemagne and of Alfred. It may be so; and in that case the destruction of the early churches and monasteries which took place in the invasion of the Danes and Normans in England and France, would have produced a want of their re-construction, after the expulsion of the former, and the conversion of the latter from bitter enemies to sealous proselytes; and thus, during a certain period, would have tended to disseminate the masonic sect.

(*To be continued.*)

Art. II. *A Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture. Exemplified by One hundred and fifty Woodcuts.*

The title and showy appearance of this volume (for, according to the publisher's phrase, it is handsomely got up) are calculated to seduce the eye and prepossess the mind of the student in the subject to which it relates. *A Glossary of Terms in Architecture* would seem to imply a comprehensive survey of a branch of knowledge requiring varied and extensive research, and exhibiting a diversity of topics for illustration, including etymology, definition, description, and interpretation of words and phrases. The term Glossary, indeed, usually signifies a treatise, the especial object of which is to explain antiquated and obsolete expressions. Any work which corresponded in character with these requisites, must be compiled from a multitude of sources; it was, therefore, hardly necessary for the author of this volume to inform his readers, in his preliminary advertisement, that " his work lays no claim to originality, its sole object being utility." But allowing the author all the credit due to his disclaimer, it must, unfortunately, be added that he has but imperfectly succeeded as to his professed *sole object*, utility; for this glossary is not calculated to fulfil the expectations excited by its title-page, or to satisfy the student who seeks for critical information.

Aware of the deficiency in this department of literature, we hailed the promise implied in the advertisement of the work, hoping that it might prove not only superior to the previous publications of Nicholson, Willson, Britton, and other architectural lexicographers, but, also, that it might supply a standard book of reference, to which those in want of information could resort with confidence and satisfaction. We are sorry to be obliged to state that the reasonable expectations thus raised have been by no means gratified. Both in the plan and in the execution of this work we perceive abundant cause for disapprobation. The glossary is formed on too contracted a scale, for the whole volume contains only 56 pages of letter-press; and in these few pages the author professes to comprise *all the terms* used in the four classes or styles of architecture mentioned in the title, with the requisite explanations and remarks. But this radical defect in the work is by no means redeemed by the manner in which it is executed. The selection of terms has not been made with that care and judgment which are due to such an undertaking, and the work must be characterised as meagre and imperfect in every respect. The etymology of architectural terms is entirely omitted, while it ought to have been considered as an indispensable adjunct. In his definitions or explanations of words the author is too concise, frequently unsatisfactory, and, in some instances, manifestly incorrect. References to authorities might have been expected; but nothing of the kind is to be found in the body of the work. Indeed, we are told, in the prefixed advertisement, that "the best authorities have been carefully consulted, and freely made use of:" but, if a judgment as to the correctness of this statement were to be formed from the list of works appended, the extent of the compiler's reading must be considered as rather limited; for, besides the books whose titles he has given (only twelve in number), many treatises of classical authority might be mentioned, references to which would have supplied useful information beyond what could be reasonably expected in a work of this description.

That there is ample room for the censure passed on this Glossary will appear from the most cursory inspection. The work, indeed, is at once both redundant and defective; for, while distinct articles are assigned to the terms *Abutment* and *Butment*, *Almery*, *Almonry*, and *Ambry*, *Apsis* and *Chevet*, *Cyma* and *Ogee* (under which the same information is repeated); such words as *Abbreuvoir*, *Casemate*, *Curtain*, *Crypto-porticus*, *Dos-d'Ane*, *Eaves*, *Earth-table*, *Embrasure*, *Enterclose*, and others are omitted. Among the erroneous interpretations are the following:—"ABUT-

MENT, the solid part of a pier, from which an arch immediately springs." This is certainly not the proper acceptation of the term, which denotes the foundation whence spring the terminal arches of a bridge, or those which *abut* or rest on the opposite banks of a river. "HATCHET-MOULDING, an ornament which looks as if cut with a hatchet." This article is altogether wrong; it should have been Hatched-moulding, otherwise Saw-tooth or Indented moulding. A "Screen" is said to be "a latticed division between parts of a church;" but some screens are solid, or without lattice-work, and frequently ornamented with panelling.

This volume is not recommended by the name of the author; and in the absence of direct references to the original sources of intelligence, the reader must often be unable to decide how far he may rely on what comes under his notice in the questionable form of the mere *dictum* of an anonymous writer. It may not improbably be conjectured that this volume is composed from collections made by some architectural amateur, for private use, and which the solicitation of partial friends may have induced him to publish. It is inferior to others before extant, as that by Mr. Willson, in Pugin's *Specimens of Gothic Architecture*, and the Dictionary in the last volume of the *Architectural Antiquities*, by Mr. Britton. There is likewise a *Dictionary of Terms in Architecture*, amply illustrated with plates, by the gentleman just mentioned, now in course of publication, and which we hope soon to see completed.

Feb. 1837. A. B.

ART. III. *Reply to "Contrasts, by A. Welby Pugin."* By an Architect. 8vo, pamph. pp. 24. London.

THE author of this pamphlet is evidently as great an admirer of the Gothic as Mr. Pugin, but he has learned to discipline his "glorious feelings," in a superior manner. "It is a fact," he says,

> "That from the close of Henry VIII.'s reign the national architecture has fallen into disuse among us; but the reasons are far other than those which it suits Mr. Pugin to furnish. Fashion, and not feeling, has been the cause; neither were English nor Protestant artists the innovators. The revival of the Roman orders, by Brunelleschi and others, had long before taken place in Italy, the head quarters of *orthodoxy;* and it was at the hands of foreign architects that we received that first classic inoculation, which barbarised, and finally superseded, the Gothic. A fashion had set in early in Henry VIII.'s reign of patronising Italian artists in the country; and certain it is that by these means the seeds of change were sown, and, in some cases, sprung up, before the Reformation. Does not the Roslin Chapel (and even that of the Beauchamps at Warwick, in some of its combinations) testify that a communication had, still earlier, taken place with the Continent. Chief among the foreign artists whose names have descended to us, were

Holbein, and John of Padua, who, fostered and educated in that religion which alone, we are told, inspires good taste, arrived in England (the first at least) too early to favour Mr. Pugin's idea, that their works were the results of the reformation of our national religion. From this moment we might, in all reason, anticipate the change that followed; for up to that time, in the history of art in England, every fresh variety in our architecture, from the Norman downwards, had utterly superseded its predecessor, and established itself in universal practice for a period, in no one instance permitting a rival. with this fact on record, and judging from the innovations, and still more from the many innovators, which had now found entrance into England, we might safely conclude that Gothic architecture was doomed to suffer a temporary neglect among us; and that as surely as Bramante designed the great church of St. Peter's on Palladian principles, so surely would have been the case with St. Paul's, and other churches of the seventeenth and eighteenth centuries, had the religion sustained no change. For a communication had been clearly established with the artists of Italy, with men who were capable of designing in one style only, and that a style on which the church of Rome, at head quarters, had put her approving mark; and which recommended itself by its real beauty, although to many its fitness may be more than questionable.

"The first introduction of classic art into England is clearly attributable to the whim of one of the most capricious of our monarchs, very few of whose deeds are traceable to any more worthy motive than that of self-gratification. Its novelty was pleasing to his restless mind, and he took means for establishing its practice in the kingdom. But the nation was no party to the act; and the barbarous mixtures which it suffered are proofs that it was ill received, as wanting in grandeur and picturesque magnificence; and many circumstances favour the idea, that nothing but great perseverance on the part of the artists (who, having tasted its beauty in its native land, were bigoted in their admiration) finally established its practice in the country. For it, the people (unaccustomed to interfere in such matters) could not be held responsible, any knowledge of architecture being confined to the few, who in their superior wisdom led and governed the national taste; so that, with such a king as Henry on the throne, the importation of a very small number of foreigners from Rome was quite sufficient to stop the tide, and effect a striking change in the state of building at the period."

The author accounts for the long continuance of that style which has been "ever secretly felt as a usurpation over the legitimate architecture of the country," by the taste for travel which the foreign artists, and their stories of the wondrous works in Italy, engendered in the breasts of our noblemen; and by its being rendered permanently fashionable, when it was taken up by men of rank and accomplishment, such as the earl of Burlington, Horace Walpole, &c., who, he says, had

"Returned with their stores of plunder, determined to make their travel tell out in the ears of Europe, and earn cheap distinction, by erecting the villas and arcades of Palladio in the cities and counties of England. Seeing that with these few, and not with the people, rested the direction of public works, *men* who, since the first introduction of John of Padua, cut sympathy with the nation, educated themselves in foreign parts, and then returned with fresh novelties to their gazing countrymen. Mr. Pugin has no right to assume that the feelings and tastes of the people had undergone a revolution, far less that the debasement of the art was produced by, what he calls, the new system of religion."

The following passage will leave no doubt on the mind of the reader as to the preference which the author gives to the Gothic style:—

> "The limitation by parliament of designs for their new houses, to one style only, expressed the universal feeling. Not a murmur has been heard, nor does any one suppose that this is the result of indifference. It produced satisfaction through the country, from the highest rank to the very lowest. For there is a sentiment embodied in that character of building most congenial to the feelings of all but the infidel. That couutry, which has hitherto invariably made religion its principle of action, is scandalised at the paganism which is not only associated with, but is really inherent in, the architecture of Greece. It admirably sets forth the cold morality of the polished pagan, but not the warmer and more sublime faith of the Christian. Nor let us be thought strange for maintaining that there should exist a union between even our civil buildings and our public faith. We do not hold that every structure should have the character of a church; but so long as soul governs body, and the actions of men are considered to result from moral principles within, so long must there exist a forcible association between all works of genius — all, in fact, but mere imitations — and the religious, the superior passions of our nature."

We conclude with the following quotation, which, we trust, will not be lost upon Mr. Pugin, and which terminates in a sublime idea:—

> "We briefly refer him (Mr. Pugin) to the restoration, which has been effected by the Bishop of Carlisle, on Rose Castle, Cumberland; and the additions, though certainly inferior to the former, which have been made by the Archbishop of Canterbury at Lambeth. These are signs of proper feeling, to which the author of "Contrasts" is most unfortunately blinded. His comparisons do not entitle him to the merit of being an impartial judge; and the warmth of temper which he every where exhibits, will not gain for his opinions that respect, to which, as those of a person of real taste and feeling, they are undoubtedly entitled. Many of the errors, which he wastes much time in regretting, will, if present appearances may be trusted, never again be committed by the architects of our country. As when he discourses so eloquently of the barbarisms of James Wyatt at Salisbury, he must be aware that similar opinions are now held by nine tenths of his Protestant fellow-countrymen. It is too late in the day to affect superior taste; he is not a whit ahead of the generally expressed feeling on this and similar subjects. There is something ludicrous in that whining tone, intended to convey the idea that his mighty soul is bursting with the big and unshared burthen of love for our majestic antiquities. Why, the country teems with those who are sharing the feelings in which he pretends singularity. Many, too, there are, besides Mr. Pugin, who have been disgusted at the sight of James Watt, sitting like a Hun in the chapel of St. Paul's at Westminster; but the day cannot be far distant, when, with universal consent, such unseemly monuments will be removed to a more appropriate shrine. For this particular one, the centre of Salisbury Plain would be a fitter site."

ART. IV. *A popular Treatise on the Warming and Ventilation of Buildings; showing the Advantages of the improved System of heated Water Circulation, &c.* By Charles James Richardson, Architect. Illustrated with 18 fine plates. 8vo, pp. 115. London.

THIS work is dedicated to Sir Robert Smirke, and the main object of it seems to be to advocate that mode of heating by high pressure steam, for which a patent has been obtained by Mr. Perkins. We learn from the dedication that this mode has been extensively employed by Sir Robert Smirke, with success, and that it was cordially approved of by the late Sir John Soane, and adopted by him in his house and museum, where Mr. Richardson, first a pupil, and afterwards many years in the office, of Sir John, "daily experienced the benefits it imparts." Sir John's reason for adopting this plan to heat his house is amusing. "He observed that it bore great resemblance to the contrivance of the brass tube, called Draco, mentioned by Seneca as used in supplying the warm water in the Pisenia of the Thermæ; and his classical enthusiasm rendered him eager in the adoption of a plan which he considered to have sprung from our great masters, the ancients; not doubting their acquaintance with that property of water (motion of its particles on the admission of caloric), upon which the apparatus in question is founded." (p. 4.)

In the preface Mr. Richardson remarks,

> "During the time of my professional duties in Sir John Soane's office, I had opportunities (even without leaving it) of studying the different systems of warming, all of which, in their turn, have been introduced in that building. The one which I prefer, and which I have chosen for examination, is Mr. Perkins's system of warm water circulation, and is that at present successfully employed there. The ease with which warmth is communicated to all parts, and its beneficial results, led me to perceive that if the spare tubes, connecting together the different coils, were applied for ventilation, this important improvement might be obtained with a very small additional expense. Observation and experience alike taught me that to ventilate a building with any of the other warming systems would cause expensive additions to already expensive apparatus, and that the results would be less perfect than in the plan I have recommended in the following pages. The first chapter treats more particularly on the application of this system to warming buildings. The second considers ventilation in conjunction with warming. They were written from a conviction of the importance of the subject, and that the ends of warming and ventilation may be conjointly obtained." (p. 8.)

There are eighteen plates, illustrative of as many different buildings, warmed and ventilated in Mr. Perkins's manner. Pl. xv. is in illustration of Mr. Bernhardt's system of warming and ventilating by heated air; pl. xvi. shows Sir Humphry Davy's plan for warming and ventilating the House of Lords, in 1811; pl. xvii. shows Dr. Reid's plan for warming, ventilating, and transmitting sound in an improved manner, in the present temporary House of Commons; and pl. xviii. is in illustration of Dr. Arnott's circulating air stove, and system for warming and ventilating rooms.

Having given the reader a general idea of the contents of this work, we have only to add that the plates seem carefully executed, and that most of them are on such a large scale, and explain what they are intended to illustrate so clearly, that the most indifferent reader can hardly fail to understand them from a bare inspection. No architect, interested in the subject of which this work treats, should omit an opportunity of perusing it; and, having said this much, we feel the less regret at being obliged, for want of room, to defer our farther remarks on it till a future day.

Art. V. *The Churches of London: a History and Description of the Ecclesiastical Edifices of the Metropolis.* By G. Godwin, jun., Associate of the Institute of British Architects. Assisted by J. Britton, F.S.A., &c. Nos. 3. and 4. 8vo, London. 1*s.* each.

We noticed Nos. 1. and 2. of this work, in p. 143. No. 3. contains two views of St. Bartholomew the Great, exquisitely drawn by R. W. Billings, and engraved by Le Keux, accompanied by historical and descriptive letter-press. To give an idea of the care and anxiety of the publisher to have the work as accurate as possible, a cancel of p. 1. is given along with this No., on account of the single error of "Englishmen" having been printed for "Englishman."

No. 4. contains two views of St. Sepulchre's church, equally beautiful with those in the preceding No. Each No. contains, on the wrapper, a glossary of the terms used in it, so that it may be considered as at once popular and scientific; and when we add that the price is only 1*s.* a No., it can hardly fail, we think, to have an extensive sale.

Art. VI. *Analysis of Railways: consisting of a Series of Reports on the Twelve hundred Miles of projected Railways in England and Wales, now before Parliament; together with those which have been abandoned for the present Session; to which are added, a Table of Distances from the proposed London Termini, to Eight well known Places in the Metropolis; a Table exhibiting the Length, Cost, Tunneling, Curves, &c. of each of the Railways for which Bills are now in progress through Parliament; with a Glossary, and other useful Information.* By Francis Whishaw, Esq., Civil Engineer, M. Inst. C. E. 8vo, pp. 296. London.

In our preceding No., p. 203, this work is announced as in the press; and, on the wrapper of that No. we have shortly characterised it as a work which no engineer ought to be without, and which every subscriber, or intending subscriber, to a railway would do well to procure. In an angry and absurd letter written to us by the author, he charges us with having committed "a glaring error," in stating that the work is in the press, when he sent "a copy to us long since." As it may be useful to other authors to explain the reason of such an occurrence, we think it advisable to state that the greater part of this magazine is always in type three weeks, and sometimes more, before the day of publication. We did not receive a copy of Mr. Wishaw's work till March 13., previously to which our literary notices had been made up, and sent to the printer; but for this temporary injury we thought we had made ample amends by the notice on the wrapper.

Art. VII. *An Appeal to the Public on the Subject of Railways.* By George Godwin, jun., Associate of the Institute of British Architects. 8vo. pamph, pp. 45. London.

We have lately had frequent occasion to notice the literary essays of Mr. Godwin. Both his published works and his papers at the Architects' Institute are such as would do credit to the leading members of the profession; and we are particularly pleased with the style and character of the present pamphlet. We need hardly say that the writer is not amongst the number of those who unwisely oppose the introduction of improvements. He has, in this essay, entered fully into the arguments for and against a system of railway communication; and has satisfactorily proved (and we regret that there should still be a necessity for such proof) that some great change in the rapidity and expense of our internal communication is absolutely necessary in the present state of the country. He has shown the advantages which have already arisen from the partial adoption of railways, and produces a number of circumstantial arguments, as well as facts, from which to infer the future benefits, both physical and intellectual, which every class of the community must derive from its extension.

The whole pamphlet is written in a clear, candid, and straightforward manner, and, we have no doubt, will not only be extensively read, but will be productive of the most beneficial results.—A. B.

Art. VIII. *Observations addressed to those interested in either Railways or Turnpike Roads; showing the comparative Expedition, Safety, Convenience, and public and private Economy of these two Kinds of Road for internal Communication.* By Alexander Gordon, Civil Engineer, Member of the Institution of Civil Engineers, Author of a Treatise upon Locomotion and interior Communication. 8vo, pamph. pp. 39. London.

We cannot give a better idea of this most important pamphlet than the following quotation furnishes: —

"The prevailing *mania* for general edge railway communication, must be viewed with no little anxiety by land-owners, road trustees, innkeepers, post-masters, carriers, and others interested in the existing lines of turnpike-road; and also by those who value this important branch of our inland intercourse, threatened, as these "good old ways" are, with extinction, by speculators in what, in the opinion of many, is still an untried system of railway intercourse. The proposers and supporters of the many railway schemes now before the public have taken for granted that it is by railways *alone* that the vast political, agricultural, and moral advantages are to result to this country; and I have often heard my own arguments reiterated as if they had been adduced to establish railway monopolies.

"The interests of commerce and agriculture, — nay, all the interests of the public,— demand that the country should not be intersected by lines of rail-road until they have been fairly proved superior to the old lines, having all the improvements which modern arrangements, and recent (though perhaps imperfectly published) experience, furnish. It is a grand source of error to suppose that the interests of the adventurers of the new lines of transport are the same as those of the public; they differ widely from the interests of commerce and of the country in general: their object is *private gain*, and not *public good*.

"When looking at the recent introduction of edge railways for purposes of general traffic, and at the proposed extension of such roads across the country in main and branch lines, I have for some years entertained and adhered to the following propositions: —

"1. *The mechanical advantage of an edge railway is small when compared with a good turnpike-road.*

"2. *This advantage is too trifling to warrant the expenditure of the large capital requisite for attaining it.*

"3. *In the event of railways for general traffic being formed to the great leading towns, public and individual interest will be needlessly injured, however much, or however little, railway proprietors may benefit by them.*

"4. *Turnpike-roads can be improved and made available for purposes of the most expeditious, safe, and beneficial internal communication.*

"In proceeding to demonstrate the truth of these propositions regarding railways and turnpike-roads, it must be borne in mind, that each has properties peculiar to itself, and that they cannot be brought into direct and close comparison. The entire subject is, indeed, attended with some difficulty, because the properties which any line of transit ought to possess are in a manner subversive of or in opposition to each other. One arrangement is required for high velocity, another for individual or public advantage, a third for the passage of light or heavy goods, and all are more or less regulated by peculiar and local circumstances; and it is a duty which modern engineers neglect, to direct the arrangement so that no desired quality shall be entirely wanting, and only a moderate preference, unimpairing to existing interests, given to that feature most required in the principal design."

As far as we have been able to form an opinion on the subject of railways, we are inclined to agree with Mr. Gordon. The great risk of accidents which must ever attend edge railways, even under the most favourable circumstances, is, with us, a powerful argument against them. A very small stone, or an obstacle of any kind of an inch or two in diameter, is sufficient to throw wheels going at an immense velocity off the rails, and then the whole train of carriages is stopped, thrown into confusion, or overturned, and, probably, all the lives of the passengers lost, particularly if this happens on the top of an embankment; the same circumstances could hardly occur, or, at all events, not to the same extent, on a common road, with a locomotive engine, for obvious reasons. Velocity is not the only element that ought to be taken into consideration in devising a railway, otherwise the suspension rail of Mr. Dick, a model of which was exhibited in London, in 1830, would deserve the preference to every other. Perhaps edge railways are only the intermediate step between roads made along the natural surface, and roads conducted on the best lines formed on the best principles, and so as never to rise or fall above a certain slope, say one in thirty-six, in the line of their direction. If a minister of engineering were appointed by government, and county or district engineers established all over the country, it would be easy, in the course of a generation, to reduce all roads to the conditions required, and the result would not only supersede all railroads, but, as we have elsewhere repeatedly stated, enable the man who could only afford to travel in a one-horse chaise to enjoy the same comparative advantages as another who travelled with a pair of horses and a four-wheeled carriage. We shall probably go into this subject more at length in an early number. In the meantime we recommend Mr. Gordon's pamphlet as one of the most important that has ever been published on the subject of railways, agreeing with a contemporary reviewer, that his propositions are of immense importance, and that, if they prove to be true, the mischief and expense which ignorance or knavery is spreading at the present moment, is almost beyond calculation. When we read in Mr. Whishaw's book the account of railways projected or going on, and in Mr. Gordon's the arguments against the principle of edge railways, it is difficult to avoid coming to the conclusion that John Bull is either one of the most ignorant or one of the most gullible animals in existence. Nations which are poor arrive at the truth through a long course of experience, or through scientific research; wealthy nations get at it suddenly by main force — by railways instead of common roads.

Art. IX. *Arithmetic illustrated by Woodcuts, by which System the Principles of Calculation may be acquired as an Amusement.* Invented and arranged by Arthur Parsey, Author of "Perspective Rectified," and the "Art of Miniature Painting." 12mo. London, Price 2*s*. 6*d*.

This is an excellent little work, calculated, as it were, to render arithmetic tangible. About thirty years ago a work was published by Mr. Clark, showing that all arithmetic might be reduced to addition and subtraction; about the same time we recollect seeing Dr. Jamieson, in his academy in Wells Street, explain the nature of a fraction to his pupils by cutting potatoes in pieces; and, some years afterwards, Mr. Peter Nicholson, in London Street, explain conic sections by similar means. What Dr. Jamieson did by actual models, Mr. Parsey has here done by woodcuts, which are equally expletive, and admit of universal and economical diffusion.

The following extract from the introduction will show the nature of the work: —

> "All persons accustomed to the formation of the youthful mind, are aware that the science of Arithmetic has no small influence in extending the capacity of youth; it first teaches them to combine, arrange, increase, and decrease quantities, by symbols of universal adaptation. Those symbols have hitherto been submitted to infant minds without any association — their age preventing them even from regarding them as symbols. The digits, or nine figures, are placed before children; they view them merely *as* figures, and their early attempts in the four primitive rules are always distinguished by the evident defect of not comprehending that the digits are put down to represent the number of distinct quantities, either of the same or different qualities. The general principle of this necessary association, it is evident, ought to be taught on the first introduction of the symbols of quantity, that they may engage with them under a rational idea of their practical utility. All the combinations of arithmetic, from the primitive rule, numeration, to the more intricate rules of fractions, square and cube roots, are, in fact, only diversified methods of addition and subtraction. This classification reduces calculation to *two* elements; and the methods of arranging these two elements will become far more familiar when their operations are *visibly* produced. For many years we are creatures of sense; it is only by clear perception of evidences purely sensible, that mental perception begins to operate; and the earlier youth can arrange their notions by just association, the more likely they will be to extend their imaginations actively, on all the subsequently acquired branches of learning.
>
> "The accordance of figures with forms, arranged according to the popular rules of Arithmetic, which is here presented, will assist the apprehension of youth of both sexes. The preceptor or preceptress, by explaining the principles of the rules by this method, will avoid the annoyance of dulness which so frequently attends the first introduction as well as the subsequent practice of Arithmetic. Making instruction amusing is the most likely way to instil information into children; and systems which require little thinking, from their evident character, are those that induce the most lively and just reasoning when the mind developes. Children will gain useful knowledge whilst they construct the various forms, which in this work are associated with the different rules of Arithmetic; and finding no difficulty in comprehending the principles of each rule by the assistance of this work, they will find that a pleasure which has too often been a loathsome task.
>
> "Toys are usually necessary to amuse the rising generation; that the recreation essential to young persons may not be altogether unprofitable, the author of this work has had manufactured boxes of models, with which children may frequently play at constructing the operations of figures, as exhibited in the woodcuts, and thereby acquire, through the medium of a delightful amusement, the principles of Arithmetic.
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> "The boxes of models may be had of the Author, or of his appointed agents, in town and country. — No. 23. *Piccadilly, March*, 1837."

ART. X. *Lectures on Popular Education.* By George Combe. 2d edit. 8vo, pp. 126. Edinburgh.

WE notice this work, which of itself is beyond all praise, for the sake of an article in the appendix, by John Robison, Esq., Secretary to the Royal Society, Edinburgh, on an "Improved Method of teaching Drawing."

"It appears to me," Mr. Robison observes, "that every one who can write is capable, with a slight effort, of making every line or mark which is wanted in order to represent any object presented to him. It is not, therefore, the mechanical use of the pen or the pencil which requires to be taught, so much as the art of looking at objects, and *of recognising what we really see.* When the habit of noting the true visual forms of objects has been acquired (which it will soon be, if cultivated under the directions of an intelligent instructor), the power of delineating the outline will not be long found wanting; the perception of the effects of light and shade may be acquired in the same way, and they will then be rendered on paper by the pupil with a degree of truth which he could not attain by any time or labour spent in copying the drawings of others.

"If a young or uninstructed person be required to make a representation of such an object as a common pencil, he will probably proceed to mark on his paper an outline of the actual length and breadth of the pencil, but he will be at a loss to show that it is round and not square; again, he will not be able without consideration, or perhaps explanation, to delineate on paper the different appearances which the pencil assumes when held nearer to or further from the eye; or in positions more and more oblique until nothing be seen but the circular end. A little pains on the part of the instructor would lead a pupil to observe and comprehend all that is required to do this, by making him attend to what he really sees; and the lesson, when once acquired, would be in little danger of being forgotten, although it in fact include the whole doctrines of perspective.

"In forming any institution for teaching drawing *as an useful art,* I should therefore propose that the pupils should, from the very commencement, be exercised in noting and delineating the appearances of a few simple objects, presented to their view at varied distances, heights, and degrees of inclination. A convenient object may be found in a cubical box of wood, fitted to slide on an upright rod or stand, on which it may be fixed at any desired height by a hollow through its axis. If this model be set in front of a pupil, at such a distance that it can be conveniently seen, and its height be made that of his eye, and one of the sides be parallel to his face, then, on noting its appearance, he will soon observe that it may be represented by a square outline, parallel to the sides of his paper. If the model be then raised by sliding it up the rod the pupil will find that a change in the *apparent* form has taken place, and that his outline must include a representation of the bottom, which he will be enabled to give, by combining his present observations with what he learned in studying the changes of position of the pencil in the earlier lessons. He will also find, that the degrees of light falling on the two faces which he now sees are different, and require different shadings from the pencil. In the first case, the single face of the cube which he saw may have been either lighter or darker than the distant back-ground, and in the delineation some shading may have been required on the back-ground, or on the object, acccording to which appeared darkest to him; but, in this second case, he may have three degrees of light to represent, according to existing circumstances. In the same way, the position of the model may be varied, both in respect to figure and to light; or, if a class be under instruction, the pupils may interchange their places round the object, and each in succession take similar views, and compare the results at the conclusion of each series.

"It is obvious that such a system of instruction may be pursued to a great extent, and with the variations which may be required according to the views of the pupils; and that, even for those who intend to pursue the higher branches of the Fine Arts, a better foundation could hardly be given for enabling them to understand and profit by the examples left by the great masters."

We wish Mr. Parsey would get up such an instrument as Mr. Robison recommends, and would sell it with his arithmetical models.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

On the Influence of Construction on Style in Architecture. — There is a very interesting article on this subject in the *Foreign Quarterly Review*, No. 37. for April. It occupies thirty pages; and, to an architect, is worth the price of the Review.

Civil Architecture. — The article with this title in the *Penny Cyclopædia* is said, by the author of the article above referred to, to afford a very lucid synopsis of the subject, and to contain many no less ingenious than novel remarks. — *Cond.*

Art. II. *Foreign Notices.*

FRANCE.

Cloth of Glass.—M. Dubus Bonnel of Lille has discovered a method of making a cloth of glass, which is perfectly flexible, and may be applied to the hangings of rooms and other purposes. This cloth of glass is extremely beautiful; and, from the manner in which it reflects the light, it surpasses in brilliancy every thing that has ever been attempted with silk, even when combined with gold and silver. Some specimens of this new manufacture have been exhibited in the Passage de l'Opera in Paris; and the Queen of the French was so much pleased with them, that she ordered a golden medal to be sent to the inventor. The following passage is extracted from a French paper:—"When we figure to ourselves an apartment decorated with cloth of glass, and resplendent with lights, we must be convinced that it will equal in brilliancy all that it is possible for the imagination to conceive; it will realise, in a word, the wonders of the enchanted palaces of the *Arabian Tales*. The lights flashing from the polished surface of the glass, to which any colour or shade may be given, will make the room have the appearance of an apartment of pearls, mother-of-pearl, or diamonds, or composed of granite, sapphires, topazes, rubies, emeralds, amethysts, &c., or, in short, of all these precious stones united and combined in a thousand ways, and formed into stars, rosettes, bouquets, garlands, festoons, and graceful undulations, varied almost to infinity." (*L'Echo du Monde Savant*, &c., No. 58. Feb. 15. 1837.)

GERMANY.

Blasting Rocks by Lightning. —In Prussia, in order to get rid of an enormous rock, the expense of removing which by ordinary means would have been immense, a deep hole was bored into it, into which was fixed a bar of iron, 28 ft. high, for the purpose of attracting lightning. The experiment was successful; and the first thunder storm shattered the rock into fragments. — *Literary Gazette, Oct.* 1. 1836. p. 637. We shall doubt this statement till we hear it confirmed; not but that the idea is sufficiently plausible, but because we think a rod of 28 ft., unless the rock were very much elevated in the atmosphere, not likely to be much more effective than an ordinary charge of gunpowder. — *Cond.*

Great Works begun or projected at Vienna, are the universal subject of conversation: a bridge over the Danube; a system for supplying water to the whole city, by means of a steam engine; a railroad from Vienna to Prague, another railroad from Vienna to Raab in Hungary; in short, the establishment of steam boats between Trieste, Candia, Alexandria, Syria, and Greece, are enterprises of the highest interest. (*L'Hermes*, Feb. 1837.)

RUSSIA.

A Railroad is now forming, or rather, is nearly completed, between Petersburgh and Tzarskojeselo. Though it has been represented as being under the especial protection of the imperial government of Russia, it is the work of a company of shareholders, who received from the emperor an ordinance, dated March 21., granting them various privileges. Some description of this Russian railroad may not prove uninteresting. The line commences nearly in the centre of Petersburgh, continues in almost a straight line, and with a medium rise of 1 in 1028, for about 18 miles, and terminates within the great park of Pawlowsk. The rails, locomotive carriages, and other railway machinery, were contracted for in this country by the Chevalier von Geustner, the engineer, and are to be admitted into Russia duty free. The locomotives will be, it seems, remarkably powerful; the width of the track being laid down at 6 ft. instead of 4 ft. 8½ in. It is declared that Stevenson's engine, on trial, was propelled 65½ miles, and Hackworth's at the rate of 72 miles, per hour. The engines are to be provided with apparatus in advance of the engine, for clearing away the frozen sleet and snow from the rails; and each is to carry a trumpet instrument, that will perform by mechanism flourishes and marches, with a power equal to that of a brass band! The work was commenced in April last, and is to be completed this October. It is proposed that the whole line should be lighted with gas. (*Times*, Oct. 26. 1836.)

Art. III. *Domestic Notices.*

ENGLAND.

The Art-Union; a Society for the Advancement of the Fine Arts.—The object of this institution is the purchase by subscription of selected works of art, for distribution amongst the subscribers.

Experience has already supplied not a little evidence of the usefulness of Art-Unions. Of those of Germany, Baron von Klenze, the celebrated architect of the King of Bavaria, says, "They act as a very great encouragement to art, in those branches more especially which do not receive the encouragement of the government;" and Dr. Waagen, Director of the Berlin Gallery, assures us that the Art-Union of that city, which collects 1200*l.* annually by a subscription equal to fifteen shillings of our money, "is highly instrumental in spreading good works of art throughout the country, and gives so much satisfaction that eight others, on a smaller scale, have been established in the Prussian provinces; while similar institutions have also arisen in Bavaria, Saxony, Wirtemberg, and Hanover, by which the feeling for and interest in the arts have been extended in an extraordinary degree." Similar results have attended the establishment of the "Association for the Promotion of the Fine Arts" in Edinburgh. In its first year it raised 700*l.*, and last year, no less than 1270*l.*; and was enabled not only to purchase the finest works exhibited by the Scottish Academy, but also to devote a certain sum towards the engraving of one of the best pictures so purchased.

But the plan which the Committee of the Art-Union has determined on adopting, as the basis of its first year's operations, differs in an important particular from those both of Germany and of France, and from that of the Association at Edinburgh, inasmuch as the prize-holders are called upon to exercise their own taste in the choice of the pictures, or other works of art, to which their prizes entitle them. This feature has been borrowed from a plan which appears to have been very successful in Liverpool during the last two or three years; not less than 1050*l.* having been subscribed for the purchase of pictures, &c. from the exhibition of the Liverpool Academy in 1835, 1836. This sum was divided by the Committee into a certain number of prizes, which were then drawn for by lot amongst the whole body of subscribers; the fortunate holders of them respectively selecting from the exhibition works of art of equivalent value, and in many cases adding further sums thereto, in order to obtain particular works which they were desirous of possessing. About 500*l.* was in this way added, during the last season, to the amount originally raised.

On the subject of such societies generally, a late Committee of the House of Commons, appointed to inquire into the state of the arts and manufactures, says in its report: — "These associations for the purchase of pictures to be distributed by lot, form one of the many instances in the present age of the advantages of combination. *The smallness of the contribution required* (one guinea annually) *brings together a large mass of subscribers, many of whom, without such a system of association, would never have become patrons of the arts.*" It is evident, therefore, that Art-Unions, in all the places, and upon all the plans which have hitherto been tried, have been productive of more or less benefit to the fine arts, by increasing the number of those who take an interest in their advancement, and who look to them for some of their most constant and permanent enjoyments; it cannot be less evident that much remains to be done in England before the fine arts will attain the high rank which they ought to hold in a country producing so much talent, and possessed of such large and increasing resources.

On these grounds the promoters of the Art-Union ask for the cooperation of all who think their object a worthy one. To those who *do habitually* encourage the fine arts, they say, lend the sanction of your name and your influence to increase the number of those who, like yourselves, look to those arts *for part of their every day pleasures;* to those who have hitherto, from motives of economy or otherwise, omitted to do so, they say, try the experiment, and you will find that not *taste*, but the ostentatious luxury which has to be gratified without it, is *expensive*. Every man has an interest in the highest possible prosperity of the fine arts, and they can only attain that prosperity where such interest is felt, and made to flow out into exertion — exertion which immediately repays itself.

The Honorary Secretary to this institution is E. Edwards, Esq., 35. London Street, Fitzroy Square. — *Cond.*

The New Houses of Parliament. — There is a very extraordinary article on this subject in the *Age* newspaper for February 26. It is written in a very bad spirit; and, as we are informed, it is in many points false, and certainly in others very absurd. The object of the article seems to be to elevate Mr. Cottingham, and to depreciate Mr. Barry: and perhaps it will hardly be believed by those who have not read the article, that the latter is termed "an architectural charlatan"; and accused of having "pirated and robbed" Mr. Cottingham's plans "in many particulars." Mr. Barry, according to this writer, "was not even the author of his own plans!" "We have heard," he continues, "that Barry's design was a joint production, the result of six weeks' hard labour at Sir Edward Cust's country seat; but for this we do not vouch." The Commissioners are charged both with partiality and injustice, abused for their ignorance, and caricatured for their want of taste. Perhaps the article hardly deserves serious notice; however, we consider it but justice to the architects who exhibited designs, to state that we have conversed with a great number of them on the subject of the designs, both while they were exhibiting, and since; and that we do not recollect one of them who did not allow that, taking it altogether, Mr. Barry's design was decidedly the best. This was the universal opinion of the public, at the time the plans were exhibiting. Indeed it is not merely in the designs for the New Houses of Parliament that Mr. Barry has shown himself the first architect in this country, but in almost everything else that he has undertaken; and we are decidedly of opinion that were the competition to be thrown open a second time, Mr. Barry would still carry away the prize. — *Cond.*

Architectural Drawings by Bruce, the Traveller in Abyssinia.—We understand that Bruce, the famous African traveller, made very minute drawings, accompanied by accurate dimensions, of the ruins along the coast of Africa, and of some of the ancient monuments even further inward. These he drew out to a scale during the many years of his retirement in Scotland, and the set is now in the possession of one of the family. We are informed that these drawings are to be shown to the members of the Graphic Society, at their meeting on the 10th of May, and will, no doubt, be a rich treat. We have heard it whispered that a foreign government are in treaty for them; but we hope they will not be allowed to leave the country, and that there is spirit enough among us to retain possession of these interesting documents of one to whom science already owes so much. — *M. I. B. A.*

William Wilkins, R.A., author of the *Antiquities of Magna Græcia*, and translator of the *Civil Architecture of Vitruvius*, has been appointed the professor of Architecture in the Royal Academy. — *F. Lush, April*, 1837.

Canonbury Tower is about to be razed to the ground, and "a new and commodious establishment erected on its site"! Does not the possessor show a great want of taste in proposing to sacrifice this once royal residence, which was also one in which Goldsmith lived and wrote? — *Id.*

LANCASHIRE.—*Liverpool.* The new building for the Liverpool Mechanics' Institution, one of the noblest erections for educational purposes in the kingdom, was almost totally destroyed by fire during the night, between the 30th and 31st of March. No event which has occurred in Liverpool for a series of years has excited a greater degree of regret amongst all classes. Established without reference to party purposes or political predilections, this institution formed a sort of neutral ground on which the operative and the merchant, the reformer and the conservative, those seeking knowledge and those anxious to impart it, could throw off for a time the invidious distinctions, the artificial restraints of ordinary intercourse, and breathe a more kindly and genial atmosphere. The usefulness of the institution had been for a long time greatly circumscribed by the smallness and inconvenience of the premises at present occupied, and plans had been matured for carrying out its objects on a much more extended scale in the new building. In addition to lectures twice a week, for which the most eminent men in every department of science and literature were engaged, and the evening schools for the mechanics and young men, a prospectus had been issued for the establishment of a High School, in which the children of the middle classes might receive, on a very moderate scale of expense, an education vastly superior to what could now be obtained for double the amount. A school, on a still lower scale of expenditure, was also to be established, to be called the Lower School, which should embrace all the elementary branches of learning and science, but omitting the classics. For all these purposes the new erection possessed ample accommodation, and the arrangements were all but completed, the High and Lower Schools having been intended to commence in July. In the mean time, the mechanics' schools and the lectures were to have been removed immediately. The building was fully completed, and arrangements were made for opening it with considerable éclat on the 6th of April, when Thomas Wyse, Esq., M.P., chairman of the Parliamentary Committee on education, with many other friends of the diffusion of knowledge, were to have been present. But alas for the instability of all human affairs! all these pleasing anticipations for the future were doomed at " one fell swoop " to be utterly destroyed. The building was left by the man in charge at 6 in the evening of the 30th of March in perfect apparent security; a few hours sufficed to convert the greater portion into a blackened mass of ruin. Between 11 and 12 a policeman on duty in the neighbourhood perceived a thin spire of flame shooting up near the centre of the roof; the alarm was given, the engines were sent for, and the building was broken into. The fire-engines were soon on the spot, but some time elapsed before any water could be procured. Mr. Whitty, the active superintendent of police, endeavoured to marshal his forces to produce the best effect; but, owing to the hurry and confusion, neither the architect nor the clerk of the works were sent for at first, and no person present being acquainted with the plan of the building, the men were for a considerable time bewildered in the intricacy of the passages filled with dense clouds of smoke. The large theatre, situated in the middle of the building, 60 ft. diameter, soon presented the appearance of the crater of a volcano, a pyramid of flame shooting up to the height of 40 ft. or 50 ft. above the roof, whilst the interior glowed like a vast furnace. The draught of air rushing through the doors leading into the theatre was such, although the external air was nearly calm at the time, that the hat of one of the men was blown from his head completely into the centre of the flaming embers. The attention of all parties was now directed to saving the class-rooms which surround the theatre on every side, by playing upon those portions immediately contiguous to the flames; and to a considerable extent these exertions were successful. The construction of the roofs is such that the roof of the theatre has no connection with the surrounding roofs on three sides, except where the gutters meet. There is also no connection between the timbers of the lower portions of the building and the theatre except by the doorways. Owing to these favourable circumstances, and the vigorous efforts made to take advantage of them under the direction of the architect and builder, a great portion of the edifice has been preserved from destruction. The beautiful stone front and portico is entirely unscathed, not even a square of glass having been broken. The east and west sides are also uninjured, the fire having been confined to the centre and back of the building, where it raged with such fury that the timber, &c., actually appear to have passed into thin air, and left not a wreck behind, for the ashes of such a mass of combustibles are exceedingly small. The theatre, situated in the centre of the building, with the staircases attached, the museum, chemical laboratory, apparatus room, and lecturer's private room at the back, are entirely consumed. The surrounding buildings are more or less injured. The keeper's house, only separated from the chief seat of the fire by a 2-ft. brick wall, is not in the slightest degree injured. It is not unworthy of remark that the only effect of the fire upon the walls has been to render them harder and firmer, the mortar not having been calcined in the slightest degree, which bears tolerable testimony as to the quality of the materials employed.

It is a fortunate circumstance that the books, furniture, and fixtures had not been removed to the building. The only valuables were some statuary, presented by R. V. Yates, Esq., consisting of an antique Diana; an antique statue, supposed of Urania, found under the Farnese palace at Rome; a beautiful marble copy of the Medicean Venus; and a group representing maternal affection, by Borromini. These, which cost the munificent donor upwards of 1000*l.* are almost entirely destroyed. The building cost about 10,000*l.*, exclusive of land, and the damage is estimated at 4300*l.*

Nothing satisfactory has yet been elicited as to the origin of the fire. The building was warmed by Mr. Price of Bristol by air heated by passing through a series of hot-water vessels. It is only justice to that gentleman to state, that after the most rigid examination of the building, and the strictest investigation of all the evidence which could be procured, it is placed beyond a doubt that the heating apparatus has had no connection whatever with the fire, which appears to have originated in the ceiling or roof of the theatre, at a considerable distance from any flues or fireplaces whatever. There had been workmen engaged in this part during the previous day; but no candles, fires, or ignited matter of any kind has been in use, as far as can be ascertained. Smoking on the premises was strictly prohibited. The matter is wrapped up in mystery, and it is probable will remain so.

The restoration of the building is intended to be commenced immediately; and it is confidently anticipated that it will be completed in time for the next meeting of the British Association for the Advancement of Science, which will be held in Liverpool in September. — *P. Liverpool, April* 14. 1837.

ART. IV. *Retrospective Criticism.*

On Mr. Peter Nicholson's Rule for the Construction of the Oblique Arch. By Charles Fox, Esq., from the *Philosophical Magazine* for March.

[Having published Mr. Fox's original letter (vol. III. p. 251.), and also an extract from Mr. Welch's remarks on it, in the current vol. p. 90., we consider it but just towards all parties to publish the following letter also; though we have to apologise to Mr. Fox, and the editor of the *Phil. Mag.*, for having neglected to ask their permission to do so, till it was too late in the month to wait for a reply.]

Mr. Henry Welch, in his letter to Peter Nicholson, Esq., states "the propriety of setting the public right as to [the person to] whom the merit is due, for a proper and certain rule for the construction of the oblique arch," and subsequently he says, "I think that there can be no doubt that your claim to the rule for the proper formation of the stones, is prior to that of Mr. Fox; and I have yet to learn, that any rule exists by which the oblique arch can be so truly built as the one that you have published; I feel, therefore, bound in justice to myself, briefly to notice Mr. Welch's letter, and also because the principle laid down in my former paper [vide *Arch. Mag.* vol. iii. p. 251.], does not appear to have been clearly understood by the writer of the letter in question.

The two points to be determined are, whether my rule is identical with Mr. Nicholson's; and if not, which is the better of the two. That they are not identical, I hope will be evident from the following facts; and which is the better of the two must be left to the judgment of your readers.

No one would for a moment hesitate to acknowledge the obligations which practical men are under to that highly talented individual, Mr. Peter Nicholson; but on referring to his *Treatises on Masonry and Stone Cutting* (plate 17.), it will at once appear, that the intrado is the only surface developed, and the approximate line being laid down upon it, all the courses are drawn at right angles to that line; the courses, therefore, are drawn with reference to the intrado only. Now my plan is to make use of neither intrado nor extrado for this purpose, but to lay down all the courses upon a supposed intermediate surface: the two plans are therefore not identical.

Now the reasons why I conceive my plan to possess advantages superior to Mr. Nicholson's, are these. On referring to my previous letter [*Arch. Mag.* vol. iii. fig. 107., p. 256.]; it will be seen that the angles of the courses, as shown in the developed intrado and extrado, differ very considerably, even more than 16°: it will therefore, be obvious, that if the angle of the intrado is adopted for the rule (as by Mr. Nicholson), then the angle of the extrado will be wrong: and again, if the angle of the extrado were adopted for the rule, then the angle of the intrado would be incorrect; for in either case the thrust would not be in the direction of the abutment, which in every arch is an essential point.

Now, to use my own words [Vol. III. p. 255.], "it is evident from fig. 106., that if spiral planes are considered as composed of spiral lines placed at various distances from the centre of the cylinder, each of these lines will form a different angle with the axis; and therefore, as an arch has always the same thickness, that although we have the inner edge of the spiral plane placed at right angles to the thrust, yet every other portion is gradually departing from a right angle, and is exerting its force in an improper direction. Thus an arch of this description can never exert its thrust in the direction of the bridge, but is endeavouring to push the abutments obliquely. To get the thrust strictly correct, I have supposed the arch to be cut into two rings of equal thickness (see fig. 107.); and having considered the external ring as removed, have proceeded to develope the outside surface of the remaining one. This I shall hereafter speak of as the intermediate development, as it is the development of a surface midway between the extrados and soffit or intrados. Upon this intermediate development, I place the approximate line; and then draw all the courses square to it, by which means we obtain a line in the centre of each in the true direction; as in proportion as the one half of this bed exerts its force in an oblique direction on the one hand, the other half acts in the opposite direction, and is therefore always producing a balance of effect, which resolves the various forces into one, exerting all its power in the true direction, which is the object to be obtained. (*Arch. Mag.*, vol. iii. p. 256.)

It will be seen that, in all the elevations of oblique arches given by Mr. Nicholson, the bedjoints in the face are straight lines, whereas by my rule they are necessarily curves. (See fig. 102., in *Arch. Mag.*, vol. iii. p. 253.)

In corroboration of my statement, that "many practical men have experienced considerable difficulty in the construction of skew bridges," Mr. Welch has furnished several instances; and the fact which he adduces, that "the executive engineer of a very extensive public railroad has very prudently applied to a competent person for a definite development of your (Mr. Nicholson's) principle," is really admitting that the principle is not developed with sufficient clearness for practical men in Mr. Nicholson's treatise. Mr. Welch also seems aware of some latent defect in Mr. Nicholson's rule; for he says, "I am firmly of opinion, after an attentive observation of the practical working of the best" (meaning, of course, Mr. Nicholson's) "rule, that it is very injudicious to adopt them" (oblique arches), "except in cases of absolute necessity;" and so giving it to be understood that oblique arches, built on Mr. Nicholson's principle, are not so substantial as square ones. Mr. Welch will find it difficult to point out any such want of stabilitying arches built on my principle.

Every one will be ready to admit that oblique arches should be avoided, from being more expensive, and not equal in appearance; but that they are not inferior from any fault in their "practical working," my own practical working has established.

I trust that what has been brought forward, shows that Mr. Nicholson's rule and mine are not alike; and, therefore, that he has no "prior claim" to mine; and that my rule possesses advantages not to be found in his. — *Charles Fox. Park Village East, London, Jan. 19th.* 1837. (*Phil. Mag.* vol. x., 3d series, p. 169.)

Mr. Perkins's Hot Water Pressure System. I have lately been called upon to examine a case of Mr. Perkins's Hot Water System, which fully bears out in actual event, the theoretic anticipations of "Censor" (Vol. III. p. 42.). At Lord Harberton's, of Rathangan, near Kildare, one of these apparatus was erected by Turner and Walker; and the second winter it was at work, part of the coil in the fire suddenly burst, and blew nearly all the ignited fuel in the furnace about the apartment in which it was; which, but for the noise of the explosion rendering the discovery of the accident immediate, would, in all probability, have set the room on fire. The whole apparatus is about to be removed. The fracture is a longitudinal rent, and appears to have arisen from sheer heat and pressure; clearly proving that it is impossible so to apportion the surface receiving to the surface dispensing heat, that the capability of the latter for carrying it off may not at some time be so limited, or reduced, that the heat and consequent pressure may accumulate in the tubes to such an amount that an explosion is the consequence.—*R. Mallet. 94. Capel Street, Dublin, March* 14. 1837.

Mr. Edmond on the Perspective Plane. (p. 181.) — In justice to myself, and to prevent any misconception of the remarks in Mr. Edmond's paper, I am compelled to offer the following observations: — Mr. Edmond compares my system with others, giving the advantage to mine, but considering each to have its defects; now, to the lovers of truth and pure science it is due to admit, if this is really the case, the work I have produced is scarcely worthy perusal; and Dr. Brook Taylor's, or any of the other vertical systems of perspective, may be still acknowledged as a scientific system of visual representation. On the other hand, if it can be shown that I have brought to light an original, practical, and perfect theory of vision, then your "doubting readers" will judge for themselves whether I am the "happy author" of "improvement" only in the art of perspective, and if there are any defects in my system. In every branch of this science and art, the problem proposed to be solved is, to determine the images of objects formed on the seat of vision from given positions. This, with diffidence I state, science has never done, the perfect laws of visual imagery having never, till the appearance of my system, been laid down. The appearances of forms, as they cannot be seen, are produced by current science, and approximating delineations only are to be found in all works of art, which have been unconsciously produced, and consented to by society from the non-discovery of the true elementary science of knowledge. In the first place, the lines of parallel surfaces, oblique to the vision, appear to approach or converge at the greatest distance from the eye, whatever may be their position, and would meet in a point if produced. For parallel horizontal lines, science has its proposed laws; and investigation will prove if they are mathematically correct. Has science or art ever followed the control of the eye on parallel perpendiculars standing oblique to the vision? Men of reputed talent deny the convergence of them. Ask any ordinary or unprejudiced person whether a parallel tower appears of the same width from top to bottom, and the invariable reply is, "every one knows it does not." Some scientific characters acknowledge this natural fact; but they say, "though the principle is undoubtedly true, it will not do for practice." Why does the same principle do for horizontal parallels and not for perpendicular parallels, when one law governs all? Practice must be erroneous without principle. Science and art have never detected this important point, with its attendant reduction of length, vertically as well as horizontally. The public has been so long accustomed to the effects of this omission, and this necessary knowledge being yet so circumscribed, it may be long before society becomes satisfied with the truth of accurate delineation, especially if want of candour and prejudice retard the universal recognition of the true principles. Mr. Edmond hints that I was "aware" of convergence, but censures me for not "sufficiently urging the importance of it;" yet just afterwards he says, "it may be done with great readiness" by my lateral plan, of which he gives a diagram. It is due to myself to remark, that the merit, if any, of this principle belongs to me; and that the knowledge displayed in criticising my work was derived from the work itself, aided by information communicated by a learned friend of his who received instructions from me. In Vol. III. p. 437. your readers will see the cube converged, which is the first published instance of this natural effect. To return to Mr. Edmond's remarks: he says, "It is quite erroneous to suppose that the principles and rules of the vertical system are false; and, though other systems, and this also, may have defects or disadvantages, it would not invalidate them, even if we could show the right plane to be the only true plane." This is curious reasoning, and can never define perspective science. If the vertical system produces what is seen, need more be required? Have the accurate appearances of things been known, and if so, why have they not been delineated by art on true scientific principles? The plane that I show to be the true plane only is the one that can produce these natural images. Do approximations prove them to us, or rightly inform our judgment? Mr. Edmond pronounces my system "to be constant, and therefore the best entitled to be called the natural plane." The defects he supposes to be such, as in the instance he mentions of a door, are not defects; the fact is, he does not understand them rightly. They are natural effects, yet misunderstood. Delineations by my system differ from all others; *the new or the old must be false*, for there cannot be two different delineations of the same thing seen from the same point of view. Again, Mr. Edmond says, "There is no proof that there is in nature any plane at all, nor any surface, nor any impress on the pupil, nor any filmy cast of the objects of infinite contractibility, launched incessantly at the eye; but there is proof that an image is formed on the retina, and with that the judgment deals." Is not the image formed on the retina by rays passing through the pupil, launched incessantly at the eye, or how is it formed? It is admitted to be formed by the modifications of the eye, and the judgment can only deal with the image formed through the right plane, passing on to the seat of vision; conceived images lying within other planes or sections of the rays being delineations unassociated with vision, and totally foreign to the purpose of practical science.

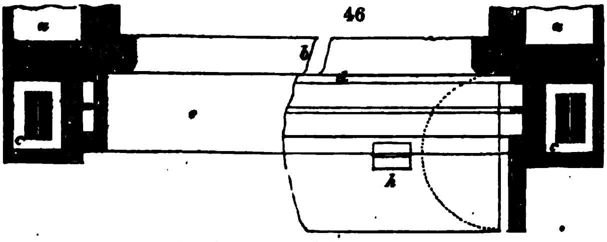
As a tutor, engaged in the formation of the youthful mind, Mr. Edmond certainly errs in not coming to a mathematical conclusion. It had been more scholastic and metaphysical, if he had contrasted the old and the new system with the undeviating principles of nature, instead of contrasting one with the other. This would have spared invidious comparison, and have been a test which would expose real defects in either. The new system may perhaps be considered to have defects in comparison with received systems, but that is no proof of its having natural defects. For the want of this test, it will be inferred that mine is only an improved or ingenious view of my own, and not the imperative doctrine of nature; as he conceives defects may exist in both systems, and pronounces the old not to be false. How are your readers to judge? If I should say to mathematical reasoners, all the parts are equal to a whole, *and a little more*, or that in the three angles of a triangle there are more than 180°, they would certainly conclude that I wanted reason, and that I had not capacity to comprehend the evident truth of an axiom. The old system produces all that is seen, and something more! The omission of perpendicular convergence and reduction or foreshortening in the laws of this science is an elementary error, from which consequent errors pervade the whole system. I court fair and candid investigation, and shall ever be found ready to aid in the propagation of truth, knowing that the consequences of a just conclusion on this subject will be of incalculable benefit to art and science. I regret I have not been able to make public all I know of this subject, and that I have not been afforded the opportunities of expounding all the bearings of this standard of taste. The dissemination of this knowledge is as yet arrested by the power of prejudice. It is impossible within the limits of this communication, to set to rights all the points Mr. Edmond touches on. I have by me diagrams and solutions of all those questions, as well as familiar methods of putting objects in pure perspective, for the use of practical draughtsmen, and the furtherance of visual science, which will be published shortly. In addition to models illustrative of the natural principles, I have invented the spectrometer, the use of which determines the position of all lines in the picture within the field of view. In addition to its conclusive ocular evidence, it will be an unerring guide to accurate sketching from nature. In conclusion, let me ask if a standard of taste can be established till the doctrine of vision is rightly understood? Can the inferences of the mind be relied on till we are conscious of the images defined by the modifications of the eye? Can practical science be considered as pure as abstract science, till its defined laws become as evident as an axiom? An artist without true perspective is like a surgeon without anatomical knowledge. It is now divested of all ambiguity; and if I meet with the encouragement due to the discovery, I will prove to society that I have investigated and concluded on every point; and that the philosophy of this science, as a common knowledge, is essential to mankind, and indispensable to the scholar and practical artist. — *Arthur Parsey.* No. 22. *Piccadilly.*

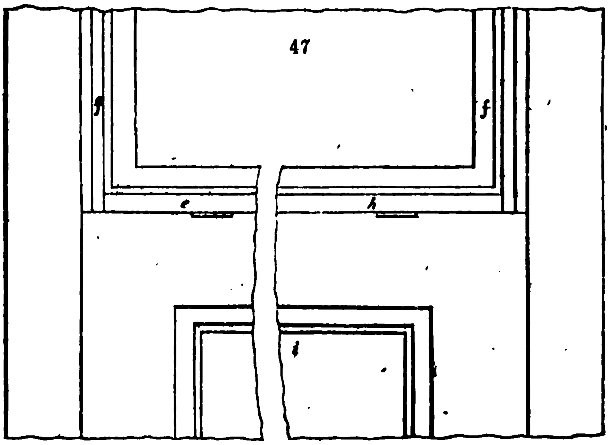
Whether G. B. W.'s Truss, or Coles's Truss, is best, is the real point at issue between us. That G. B. W. should be blind to the defects of his own design is, in the common course of things, natural enough; still, if there are defects, it is good, both for him and the public, that they should be pointed out. To repeat the tale of "omitting the king-post entirely if the span were less" is shirking the question; as the design first given by G. B. W. was "for a roof of a large span," viz. 84 ft. It is a tacit admission that something is wrong, when we find that he would fain reduce the span of the roof to enable him to remove the objectionable part of it. From some remarks in the last communication of G. B. W., I am convinced that, whatever knowledge he possesses of his own roof, he is totally ignorant of the principle of mine. Should he find himself mistaken in the matter, I am sure he will (although shielded behind three initials) make the *amende honorable,* by candidly confessing his error. First, then, G. B. W. states "my truss" to be more dependent on the queens than his, and that there is the same want of continuation in the principal rafters in mine, which Mr. Cook complains of in his (Vol. III. p. 143.). Surely a greater proof of his misunderstanding the matter cannot be given. If he had examined the sketch underneath my truss, showing the plan of the principal rafter, he would see that it (the principal rafter) is in one entire piece from the tie-beam to the joggle of the king-post; the lower part (that is, from the tie to the joggle of the queens) being twice the thickness of that part which continues upwards from the queens to the king-post; the queens and king-post straining beam, strut, &c. being half the thickness of the tie-beam, allowing the king-post also (with its struts) to extend from the tie-beam to the ridge in one entire piece; surely not showing that want of continuation which Mr. Cook complains of in G. B. W.'s design. I am led, further, to believe that G. B. W. has formed an erroneous opinion of my design, from his accusing me of "condescending to borrow" his plan of scarfing. Now he will see, by referring to my drawing, that I have shown no scarf at all; and, therefore, must not be accused of "condescending to borrow" it from him. With respect to its merits, I doubt not but it would answer very well; but it did not (as G. B. W. asserts) "occur to me some few years ago," for I can assure him it has been commonly used by every carpenter in this part of the country at least these fifty years past. G. B. W., in complaining of being unfairly dealt with, says, "he sent you the design on account of the principle, and not the details of its construction." I believed this from the first outset, and it is the principle alone, and not its details that I have throughout complained of. A reference to my former communication will show this. The principle I at first thought to be bad, and bad I still think it. I copy the size of the scantlings from the original drawing, although I think it has no great reference to the principle of the truss, or I should have given it before.

Tie-beams 14 × 12. Principal rafters 12 × 8 bottom, 7 × 6 top. Queens in shaft 6 × 7. King in shaft 6 × 7. Straining beam 8 × 6. These are bolted to the kings and struts, though not shown in the engraving (fig. 4.). Struts from queens 6 × 5. Struts from king 6 × 6.— *W. Coles. Feb.* 25. 1837.

Art. V. *Queries and Answers.*

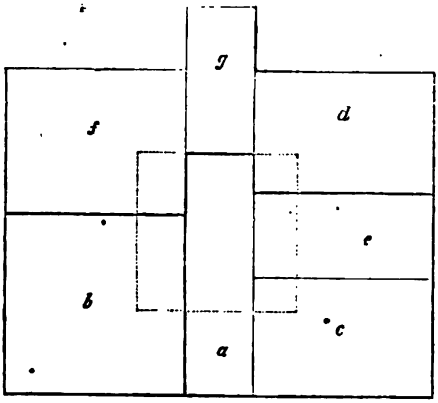
Lifting Window-Shutters. — I herewith hand you a sketch, which will give your correspondent *Erboracum* the information he requires in Vol. III. p. 192. In the accompanying engraving (*fig.* 46.), *a a* are parts of the sash frame; *b*, the inside bead, and the flap inclosing the shutters when the window is open; *c*, *c*, the shutter frame, showing the weights; *d*, a fillet screwed to the sash frame to receive the flap *e*; *f f* are the flaps which conceal the lines when the window is open, the one flap is shown open and the other shut; *h*, the flap *e* opened to let the shutters up and down. In *fig.* 47., the same letters refer to the same parts; *i* is part of the window front. I only add, that when the shutters are put down, let the two side flaps be closed, turn over the flap *e h*, and the whole is done. — *Thomas Cook*. *Leicester, June* 6. 1836.


46


47

Architectural Modelling. —A novel composition for architectural models has, we understand, just been announced. It is superior to wood, because it will neither crack nor warp; to plaster, because it is much lighter, and will not break; to cork, because it can be much more accurately and finely wrought. It is capable of representing the interior as well as the exterior of buildings, and the walls can be made to any thickness. Without paint it can be made of any colour. A model, from a design of Gibbs for one of the Cambridge Colleges, has been made of it, and will be to be seen this spring in some of the exhibitions at the West End. Several models of railways have been made of it, and have received the high approbation of the Parliamentary Committees to which they have been submitted. (*Newspaper.*) We should be glad of some specific information regarding this material. — *Cond.*

A House with a private Observatory. — Would any of your numerous correspondents be kind enough to furnish, through the medium of your magazine, the elevation and plan, &c. of a private observatory for astronomical purposes? I never had the pleasure of seeing one, nor can I find any design for one in any of your works that have come into my hands. I entertain a wish, and in fact shortly intend, to build a house, and could like to have an observatory attached to it of a safe and economical kind. The idea which at present exists in my mind is something like the accompanying sketch (*fig.* 48.); but whether it be practicable or not, I cannot determine.



The degree of accommodation required may be supposed to consist in the number of rooms portioned off in the diagram, without any reference to the doors or windows or other conveniences. Let *a* be the entrance door and passage, 6 ft. wide; *b*, the parlour, 15 ft. square; *c*, the living room, 15 ft. square; *g*, the kitchen; and *d*, *e*, *f*, lodging rooms, which are respectively 15 ft. by 12 ft., 15 ft. by 7 ½ ft., and 15 ft. by 10½ ft. Now would it be practicable to raise a suitable room over the middle of the plan, where the dotted lines are shown, of the compass of 6 or 7 yards square, rising, as it were, out of the midst of the roof? Of what form should the superstructure be? What the strength and position of the materials employed for it to rest upon? How should the doors and windows of the rooms be arranged, but especially the fire-places, so that the chimneys may not intercept the windows of the observatory? Those who give their attention to these subjects will best know the conveniences required; and therefore, without pretending to have given a plan adapted for the purpose intended, I would leave the subject in abler hands, hoping that some of your contributors will favour me with a plan, elevation, &c., on a safe and economical scale. — *Astronomicus.* *Feb.* 18. 1837.

Art. VI. *Institute of British Architects.*

April 3. 1837. — P. F. Robinson, V.P., in the chair.

Elected. E. B. Lamb, 25. Henrietta Street, Brunswick Square, as Fellow.

Presented. Transactions of the Royal Society of London, part ii. for 1836. The Designs of Inigo Jones, edited by Kent, folio, 1835. Picturesque Sketches in Spain, taken in the years 1832–3, folio. A Review of the professional Life of Sir John Soane, R.A., by T. L. Donaldson, Honorary Secretary to the Institute of British Architects. Sir John Soane's Designs, published in 1788. A Treatise on Warming and Ventilation, by C. J. Richardson, Architect. Carter's Architecture, one vol. folio. A Catalogue of the Exhibition now open at the Louvre, Paris, of the Works of Modern Artists. An illuminated lithograph of an elevation of the ancient altar screen of St. Saviour's, Southwark, as restored by R. Wallace, Fellow. A proof impression of an engraving of Sir John Soane, by Turner, after Sir Thomas Lawrence.

Dr. Dickson delivered a Lecture on the Causes and Prevention of Dry Rot, forming the conclusion of his course on the physiology, structure, and properties of timbers used in construction.

THE
ARCHITECTURAL MAGAZINE.

JUNE, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *Remarks on Two Articles in the Quarterly and Edinburgh Reviews.* By Candidus.

It was with no small degree of impatience that I cut open the leaves of two articles, one in the *Quarterly*, the other in the *Edinburgh Review*, both of which held out the promise of an architectural treat; the former being entitled "The Transactions of the Institute of Architects;" the latter, "The New Houses of Parliament." But the banquet turned out, in both instances, to be quite a Timon's one; for the covers being removed showed there were only dishes of hot water, with nothing more savoury to give it any flavour than rigmarole and twaddle. Rigmarole, indeed, pervades the *Quarterly* article to an extent truly surprising; the Institute coming in for no more than a very few words; after which there is a brief account of the mode of building cob walls, avowedly borrowed from the *Encyclopædia of Cottage and Villa Architecture;* while all the rest of the paper is occupied by a long tissue of coxcomical pedantry, to prove that cob walls were invented by Cain; that they were in vogue both at Babylon and Bagdad; among the Phœnicians and Carthaginians; adopted by the Romans, Goths, Moors, and Spaniards; introduced by the Phœnicians into the west of England; and, lastly, that cob is — what? — why nothing less than *orthodox* and *conservative!* After so much parade of cumbersome learning in order to arrive at such a truly farcical conclusion, I am surely justified in attributing to this paper the character of rigmarole. Neither are we a whit better informed than before as to the real value of building in cob, or cwbb.

I will, however, serve all this lumber as the writer of it has done the Institute, and fling it overboard at once, confining myself to the only passage which shows what the author's opinions in regard to architecture (as far as he has any) really are. "We cannot shut our eyes," he says, "to the humiliating fact, that architecture, the chief of the arts (as the name implies), has never flourished in our British Isles, as it has done in Greece and Italy." Without going further, this single sentence suffices to prove that, however deep its author may be in literary lore, he is not deeply versed in the history of our national architecture; for, were all other testimony wanting, our cathedrals alone might convince him that architecture has flourished in Britain, and has reared monuments as magnificent, and certainly far more stately, more elaborate, and more varied, than any to be met with in Greece. As to architecture being the chief of the arts, that is too enigmatical for me even to guess what can be meant by it.

However, instead of perplexing ourselves about meaning where there may be none, let us proceed to what the author considers one of the causes which have operated prejudicially to architecture in this country; namely, "the influence of a climate damp and cold, of stinted suns and lengthened winters, in which lofty halls, spacious apartments, vast windows, open corridors and porticoes (all those gorgeous appurtenances and ornaments in which architecture delights to revel), so far from tending to render in-door existence happy, would be the instruments of discomfort, disease, and uneasiness." Seldom have I encountered anything more exquisitely malaprop than this. In order to reconcile the notable doctrine to facts, we must, in the first place, suppose, that, so far from being at all mitigated, our climate must now be greatly colder, and more inclement, than it was many centuries ago; when Westminster Hall, which has generally been considered hitherto as tolerably spacious and lofty, was erected. Very possibly, too, it is to be ascribed altogether to our damp and cold climate, that our cathedrals are such exceedingly confined and cribbed up buildings, compared with the spacious cella of a Greek temple. It must be confessed, that there have been writers who have taken quite a different view of the matter from what the very learned Theban of the *Quarterly* does; holding that the unfavourableness of climate was highly favourable to the developement of our northern modes of building, by requiring spacious interiors, where a multitude might assemble under shelter from the weather. For a nearly similar reason it might be imagined, that open corridors and porticoes are by no means mere superfluities and idle architectural embellishments, in a country where shelter from rain is so desirable. At any rate, our ancestors appear to have been of such opinion; for they were in the habit of providing both, or what is tantamount to them, although not precisely the same in regard to form and designation. Cloisters (as frequently open as glazed with windows) and porches are, to all intents and purposes, such corridors and porticoes, treated consistently with the style itself, and frequently rendered highly beautiful features in it. Again, as to vast windows, which, it would seem, are a *sine quâ non* of architectural grandeur in the writer's estimation, I am afraid that he really does not know what he is talking about; because, Theban as he is, it would sorely puzzle him to point out, not only vast windows, but, in fact, any instances of windows at all in Grecian architecture, save a few solitary examples. Even in the dwelling-houses of Pompeii there is very little in the way of windows to be met with: and here, by the by, I may enquire of him, how happened it that, in the very teeth of his ingenious theory, the Pompeian houses, instead of having "lofty halls, spacious apartments, and vast windows," are remarkable for the extreme smallness of their rooms, many of them being not more than eight or nine feet square, and without any aperture for the admission of light? Will he account for it by saying that Pompeii was originally built in a high northern latitude, and afterwards transported through the air like the Casa di Loretto? which latter *case* might have been brought forward by him, to silence the scepticism of those who might be staggered at the idea of an entire city being so removed.

Besides what has just been remarked, Pompeii is rather a stumblingblock in the way of other parts of his doctrine; because its remains prove that a very high degree of architectural taste may be displayed within very limited spaces; consequently, that "the love for comfort and private possessions, so peculiar to Englishmen," need not cramp our taste, nor prevent our indulging in the most refined elegances of the art. In fact, as far as taste and the quality of architecture are concerned, a private residence affords more scope for the display of both, and of variety of effect, than almost any other single subject: of course, I mean to say, provided the architect possess talent, and be allowed to exercise it without being thwarted and controlled.

Having despatched the man of learning in the *Quarterly* (one of whose discoveries is, that a second Lisbon earthquake would not prove a national calamity in England), let me now turn to the writer in the *Edinburgh.* If he says little that is either new or to the purpose, this gentleman cannot be accused of wearying us by very tedious prosing; since, with the exception of the quotations from Hamilton's pamphlet, the whole of his article does not amount to more than three pages. To say the truth, he does very little more than assent to the views of Mr. Hamilton; whom he professes to regard very highly as a critic; because, among other reasons, "he has been engaged in high political situations!" a most extraordinary pledge for his discrimination in matters of taste. Had he told us that Mr. Hamilton kept an excellent table, and a most accomplished *chef de cuisine*, it would have been equally, perhaps infinitely more, to the purpose; as that would help to account for what is now quite a mystification. Whether Mr. Hamilton himself would greatly admire the compliment, I pretend not to guess.

Those who have read that gentleman's pamphlet are aware that there is broached in it one highly original idea; namely, that Grecian possesses a decided advantage over Gothic architecture, as not being so liable to contract soil from soot and the weather. This the reviewer takes up *con amore*, and "presses it with great force on our attention," by printing it in larger type than the other extracts; after which he goes on to say, "The erection of a long series of Gothic window-buttresses (?) of jet black along the banks of the Thames will present, it may well be apprehended, anything rather than an agreeable, far less a grand, object on which the eye may repose." Jet black! forsooth: this is really painting the Devil some degrees blacker than he is. Yet a building of that colour would be, if not a particularly agreeable, at least a most original and curious, object; such a one as our metropolis cannot yet show. But the question is not one that admits of much disputation, being one which may be settled at once by the evidence of our eyes. Unless, therefore, Mr. Hamilton is prepared to maintain that black is white, it is to be presumed he would find it exceedingly difficult to maintain his opinion in the face of St. Paul's, a great portion of which is, although not jet black, very much blackened and discoloured. Or, how can such opinion be held tenable, with that exceedingly dingy, and no less sulky-looking building, the College of Physicians, flatly contradicting it?

Another fanciful notion, entirely the reviewer's own, is, that "ornamental luxuriancy" in Gothic is "excusable only where the building is upon an immense scale." Of a certainty, then, our ancestors were most inexcusable in applying the very high degree of embellishment they have done to such edifices as the King's College Chapel at Cambridge, Henry the Seventh's Chapel, St. George's at Windsor, Rosslyn, Beauchamp Chapel, Warwick, and many other pieces of architecture; which, so far from being upon an immense scale, are some of them by no means important in regard to size. Besides these, numerous examples might be cited of small chapels, chantries, porches, and similar things, to prove not only that extraordinary richness, but that a powerful degree of character and effect, may be produced upon a limited scale. It may, therefore, fairly be questioned, whether those who make amplitude of dimensions a *sine quâ non* condition in Gothic architecture can really enter into its spirit, or appreciate its beauties at all, unless they are magnified so as to strike them by the sole quality they are capable of judging of, namely, that of extraordinary size; which is, in fact, almost the sole criterion which the uneducated (viz. the uneducated in art) can judge by.

As to the reviewer's opinion just mentioned, that is completely upset by what has been done by the Gothic artists themselves; so that we cannot admit the Edinburgh critic to be in the right, without coming to the conclusion that the latter have been most egregiously in the wrong; a conclusion which none but the critic himself is likely ever to arrive at.

Against Mr. Barry's design, the writer alleges nothing; for he does not even so much as let drop any expression which would lead one to suppose he has seen it: consequently, if he has seen it, it is to be presumed, that, as a design, he is satisfied with it; and only objects to its being executed to the exclusion of one in what he conceives would be a more appropriate style of architecture.

One thing, which is certainly very strange, is, that neither Mr. Hamilton himself, nor any of those who now profess to entertain the same views, should have come forward with their advice more seasonably, and protested against the style for the New Houses being confined to the Gothic, or some modification of it, when it was first known that such was the case. There was no secret made of it at the time; for it was fully announced by the public papers, and was further stated to be in entire accordance with public feeling on the subject. Therefore, if they chose to be silent during that stage of the business, when their advice, if worth following at all, might have been adopted with comparatively little inconvenience, their motives for now raising a clamour are somewhat open to suspicion: nor can they reasonably expect to be listened to, when they have shown so very little consideration as to suffer the matter to proceed so far as it has done without at all interfering. Perhaps, after all, their real object may already have been attained; it being, in all likelihood, nothing else than to attract public attention. As to architects, if any of them coincide with Mr. Hamilton and those who agree with him, the most forcible argument they could possibly bring forward would be, to make some design in the Grecian style, that would satisfactorily convince the public of its unquestionable superiority over the other for the intended purpose.

London, May, 1837.

Art. II. *On the Effect which should result to Architecture, in regard to Design and Arrangement, from the general Introduction of Iron in the Construction of Buildings.* By M.

> "For, meddle you must, that's certain, or forswear to wear iron about you." — Shakspeare.

The *beautiful*, in architecture, not less than the *convenient*, is dependent on a perfect regard to the simple purpose of a structure, and to the nature of the *material* to be used in its construction. Necessary, therefore, as it may be, for an architect to acquaint himself with all the leading styles of decorative building, so that he may be enabled to make a design conformable to the principles which respectively pervade those styles; and free, as he certainly is, in many cases, to adapt ancient or foreign outlines to modern or domestic purposes; it is still possible that he may be commissioned to construct a building in which scarcely any of the immediate rules which have governed the practice of foregone design can be, with propriety, exemplified. Such may be the peculiar requirements of the present occasion, or such the novel nature of the material to be employed, that an architect's knowledge of all preexistent modes will, in a direct sense, serve him nothing. As to the indirect advantages which an expanded and practised mind, though never before exercised on a certain particular theme, will have over another mind which only now begins with that theme, nothing, surely, need be said: but it is certain, that, fully to succeed in his new attempt, an architect must shield his mind from the immediate influence of all old laws and acquired habits (more particularly on account of the prejudices which are very likely among them); so that what he has to do may be the sole object of his attention; and that what he has done may be forgotten in all, save in that abstract intelligence which former studies and past practice may have engendered.

Now, this abstract intelligence should leave us to consider that the massive grandeur and beauty of Egyptian architecture do not claim our admiration on the mere grounds of solidity, scale, and the elegance of individual parts; but on the reasons which legitimise these several distinctive features, as appropriate to the uses of the building, to the nature of its material, and as (poetically) obedient to the simple prototypes whence its general proportions and decorations are deduced. For the effective celebration of certain religious ceremonies, a specific arrangement of plan was necessary; and, for the joint purpose of durability and submission to the sculptor's tool, stone was the material to be employed. We have reasons to presume that the excavated and sculptured natural rock was the parent of the erected temple; and that as, in the first instance, the unremoved solid would naturally bear a large ratio to the artificially formed void, so, in the second, would the filial relationship be manifested in a massiveness of proportion rather symbolising the family origin, than merely conforming to constructive necessity. A feeling for the ponderous had been engendered, and had become interwoven with an acquired sense of gloom, as necessary to the impressive. The horizontal superstructure of the Egyptian temple emulated, in a certain degree, the superincumbent rock of the sculptured cavern; and the vertical supports exhibited a maximum thickness, necessary to the harmony of relative proportion.

Here, then, we have the result of employing stone buildings under the influence of certain associations connected with cavern architecture, and which result may be simply described as a compromise between the actually requisite and the emblematical. The erected temple is sufficiently dissimilar from its excavated predecessor to show that the last had no direct influence on the design of the first; that is, there was no positive imitation of any one particular feature; but simply an embodying, in more refined form, of that idea or feeling which the contemplation of the rock temple had established.

Again, the impressive and pleasing effect of Greek architecture is not attributable to the grandeur of its outline, or the elegance of its details; but to a certain obvious propriety, and to its self-proclaimed reasons for being what it is. As the Egyptian temple seems to have been indirectly influenced by the cavern, so the Greek temple acknowledges a prototype in the cabin of carpentry, the scantlings of which may have been delicate, and the design merely pleasing. The susceptible Greek, subsequently impressed by the gigantic proportions of the Egyptian temple, is prompted to emulate the solidity of its members, and the durability of its material. Instead of continuing to obtain posts and lintels from the forest, he now seeks for columns and architraves from the marble quarry; and exemplifies to an admiring posterity the legitimate influence of an added feeling, and a new material, upon Greek design. The employment of stone not only permitted, but positively enjoined, that increased substance which the marble portico exhibits, in comparison with its wooden precursor; and in the perfection of Greek example we see an unimprovable adjustment of the positive and ideal; the architect acting under a matured intelligence, issuing from a native acquaintance with the elegances of carpentry, impregnated by an acquired admiration for the grandeurs of Egyptian masonry.

In the Coliseum and Pantheon of ancient Rome, we see the first results of introducing the arch and vault to companionship with the architecture of Greece: but these are not the results which should have followed in regard to the critical merits of design. Since the pier and arch had, to all real intents and purposes, entirely superseded the column and beam, the latter should have been discarded, even as an ornament, from such *façades* as were intrinsically composed of the former. We do not here recognise, as in the cases of Egyptian and Greek architecture, the proper issue of a native prototype allied to an improved feeling or new material; on the contrary, we behold the mere juxtaposition of two heterogeneous principles, which cannot mix, and, consequently, yield no issue. We observe disagreeable neighbourhood, but no incorporation. As oil and water lie the one over the other, connected yet separate, so the Greek colonnades of the Coliseum float, as it were, over the Roman arcades; upon them, "but not of them." However the former, in a mere pictorial sense, may be estimable, they are, critically speaking, utterly absurd; the only way of at all justifying the application of them being grounded on the hypothesis, that the shell of the building was, in the first instance, formed without those arches which became subsequently necessary to prop it up.

Again, in the rotunda and portico of the Pantheon, as seen from without, and in the hemispheroidal vault and columnar disposition within, we see a clumsy attempt to amalgamate two heterogeneous principles; viz. the square and horizontal of the Greek temple, and the circular and vaulted of the Roman dome.

And what, then, should have been the effect of generally introducing the arch and vault in the construction of temples? Surely, we have an answer in the two varieties (the Norman and Pointed) of our own cathedrals, wherein the arch and vault form the sole governing principle, and give form, place, and just appointment to every thing around and about them.

In these exquisite examples, we observe all constructive necessities, not only provided, but boldly shown; not only shown, but made advantageous to pictorial effect: not rendered merely endurable to the eye by decoration, but giving an enviable opportunity for decoration: not, in fine, hypocritical samples of the Iago school, "I am not what I am," but honest and eloquent creatures; begotten of science and of taste, and proclaiming the why and the wherefore for their being thus and thus.

A consideration, therefore, of the several leading varieties of the architectural world, of their excellences or defects, establishes us in the conclusion, that, however poetically art may speak, it should not the less speak truth; and that, if the introduction of any new form or material into the practice of architecture intrinsically affect the relative proportions or arrangements of its anatomical condition, it shall equally affect its extrinsic or superficial character; modifying, altering, or wholly superseding, customary laws of taste, as the case may be.

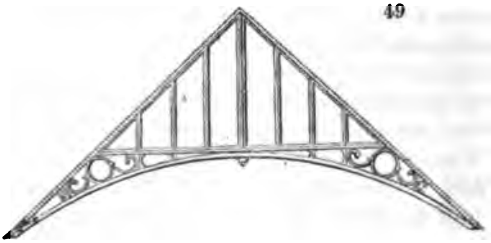
The great use now made of iron in our buildings, and the still increasing application which it will doubtless continue to receive, in short, the probability of its "general introduction," renders it more desirable that architects should qualify themselves, not less to adapt their designs to the new material, than the new material to their designs. It is possible to conceive that a building might be constructed entirely of iron; in which case, all habituated notions of those proportions which appertain to masonry must, of course, be discarded: but I shall entertain the more probable supposition, that masonry will, in a great majority of cases, continue to form the main carcass of a building, iron being employed to supersede the carpentry of the roofs, floors, &c., and even the masonry of the portico. The joinery, too, of a structure may be expected, in a great measure, to give way, as we have already iron sashes, shutters, blinds, doors, &c.; and not only iron framework roofs, but also iron covering for the same. As to the effect which the use of iron is to have upon that department of design which comes under the head of arrangement, we must not consider ourselves at liberty to meet the requirements of any new material with the forfeiture, even in degree, of any old convenience. The ichnography of our designs must be made agreeably to the best practicable disposition; the material used, and the style of decoration adopted, being wholly subject to the bare purpose of the intended building.

The question, then, stands thus: —

Given, an entirely approved plan, practicable, at a moderate expense, in masonry and carpentry:

Required, a completed design, in which iron shall be employed at the full discretion of the architect:

The mere shell of the building being modelled, without any reference to decoration (beyond that of a susceptibility to admit it), we proceed to make utility and beauty cooperate in the form and arrangement of the various iron standards, beams, ties, and arches, which are to be employed in the roofs, floors, verandas, &c. In considering the iron roof, we immediately perceive its great capabilities as a decorative feature, where circumstances admit of its being left open to the eye from within the building, as in the case of a church, hall, &c. Informed as we are in the examples of our cast-iron bridges, we cannot but recognise an analogy between the two cases; and, stretching out our first idea (*fig.* 49.), we are naturally led on to vary it, until we find ourselves unconsciously in Westminster Hall, or Eltham Palace. (*fig.* 50.) If we have lateral pressure to resist, why not bring the buttress to our aid? This need not make us absolute Gothic; though, should it fairly and obviously induce it, we shall be at perfect liberty to follow up the noble theme. Economically speaking, we shall have a double advantage; first, in the cheapness of our iron castings, as compared with wood carvings, when the



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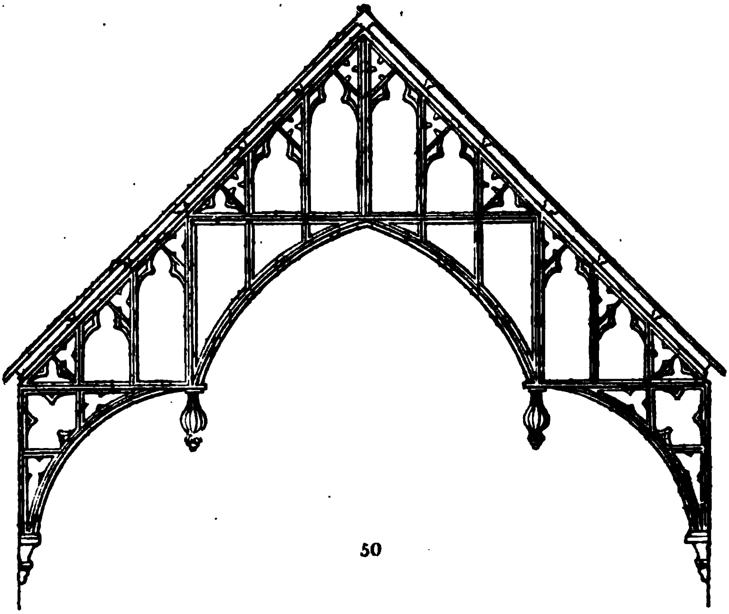

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trusses of the roof are many, and the pattern intricate and rich; secondly, in the durability of the material, the tenacity and stiffness of which will enable us more readily to render its pressure vertical on the walls.

In the particular case now before us, the floor does not claim consideration: we are only left to fill in our door and window openings, and, perhaps, to supply a porch, portico, or veranda. The curved lines of our roof will dictate the form of the window heads, and the decorative details the pattern of our casements. The portal, if enclosed, will be a mere epitome of the stone and iron work of the hall: if open, the Greek portico of columns and entablature will be at once discarded, as too massive in the thickness of its supports, and as discordant in the horizontality of its superstructure, when regarded in conjunction with the delicate and curvilinear character of the roof and windows. Thus we shall arrive at the veranda, in which the slender column and arched crowning gable will suggest themselves, and lead to a skeleton exemplification (with some variation) of the Peterborough porch. (*fig.* 51.)

Thus far, then, we see that the effect of the use of iron in some buildings may reasonably be estimated as giving encouragement to a modified species of the Gothic style, partaking of the lighter character of the Saracenic.

The idea of applying iron to churches and chapels will seem to thrive the more, the more we think upon it The frequent de-

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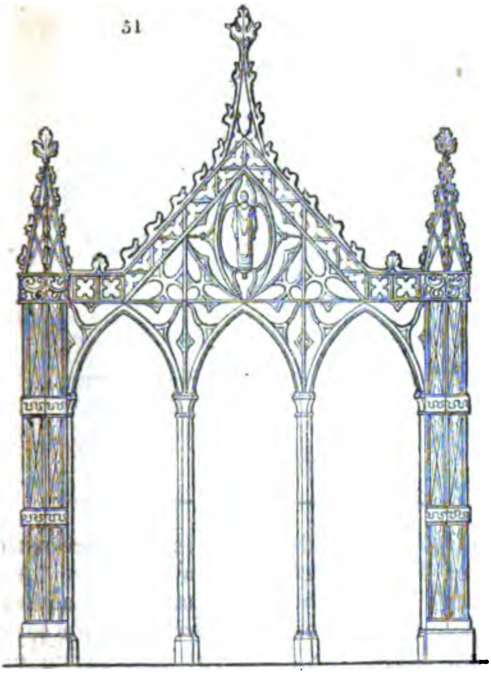

sirableness of avoiding too great a span of roof in a building which must, nevertheless, be of great width, on account of the lateral galleries, is a circumstance which urgently advocates the employment of iron columns, the allowable slenderness of which would be acknowledged as a great advantage by that large portion of a congregation, whose sight and hearing are usually so much impeded by the required thickness of wooden or stone pillars.

In a decorative point of view, also, how beautiful (we may not reckon on the grandeur which results from the stone pillar and groined vaulting) might be the joint effect of the transverse and longitudinal castings above the level of the pillar capitals; and what additional richness would accrue in the foliated entwinings of the windows! The gallery fronts, too, might be formed of open ironwork; while the pulpit would afford a still more distinguished opportunity for decorative castings. (*fig.* 52.)

And now we have to consider the most striking feature of all. Since the body of the church is to be covered with an iron roof, wherefore not cap the tower with an iron spire? What more practicable in construction, or more beautiful in effect, than a lofty spiral octagon of open work, the lower compartment of which might form the bell-chamber, allowing a free egress for sound on all sides? (*fig.* 53.)

Having thus hunted my first idea from base to summit, let me start a second, and "follow it with modesty enough, and likelihood to lead it." I have considered the application of iron to a banqueting saloon and church: let me now test it by the more humble requirements of a dwelling-house.

The foremost recommendation which iron will carry with it, in the estimation of a gentleman intending to build his residence, will be its fire-proof qualities; and it is evident it may be used to the

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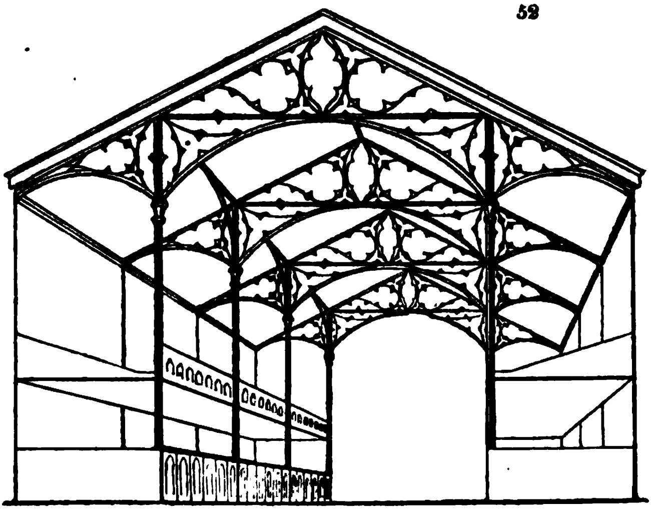

extent necessary to that purpose, without any interference with those modes and rules of design which are now in vogue. As it regards mere dwelling-houses, every reasonable precaution against fire would be taken, in substituting ironwork for carpentry in the roof and floors, the inner partitions being of masonry, like the outer walls. In such case, almost all that is now joinery might remain so; since no fire, originating in accident, and left to itself, would do much injury to floor boarding, skirtings, doors, shutters, &c. Fire would require solid beams or joists in continuous proximity. Wood, by the foot superficial, would soon be abandoned as a food too meagre for its more grasping voracity; nor need we fear attaching to the iron trusses of the roof, and to the iron joists of the floors, ceiling joists of wood. The virtues of the plastered and whitened ceiling, in all dwelling-houses, will ever continue to be acknowledged, on account of the cleanliness it insures, and the reflected light it imparts.

The application of iron, in this instance, not having affected the style of the interior, the exterior may, of course, continue to exhibit its Greek or Latin decorations, and its portico of stone or masonry. I shall only enter a most determined protest against the use of cast-iron "classics." The Greek orders literally symbolise masonry; and, when iron comes to the relief of stone, the veranda necessarily supersedes the portico. If the entrance-door of the mansion (whose internal decorations are Greek) must be protected by a projecting portal of iron, it is imperative on the architect to give it that "manner to which it is born;" i. e., so to arrange its parts, and to give them such scant-

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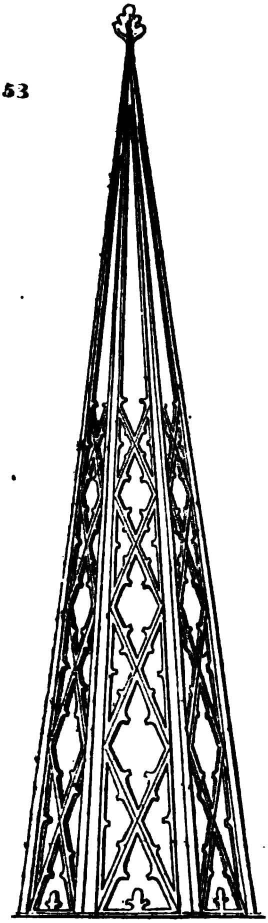

ling, as the requirements of constructive strength shall require. The nature of your material having been thus consulted, you will be left to harmonise your portal with the body of the mansion, by the use of Greek details in decoration. Accordingly as you do, or do *not*, desire breadth of effect, you will expand or compress the substance of your work; using the superficial open pilaster, or the solid pillar, as the case may be.

A very little application to the subject of cast-iron verandas will show the infinite variety of which this branch of design is susceptible. As an aid to the fancy, it were well to consult, in addition to the Gothic and Saracenic, the Indian and Chinese styles. The latter, in particular, is deserving of consideration.

Let us, thirdly (and lastly), in the way of experiment, imagine ourselves commissioned by an iron-master to design him a mansion, which may at once serve as his " house," and as an advertisement of " the means whereby he doth sustain his house;" viz. of all the varieties of his foundery.

Fig. 54. shows a general idea of the plan.

Fig. 55. is an elevation of the front.

The hall, in the one wing, and the conservatory in the other, being only one story high, would afford opportunity for two designs for ornamental roofs of cast iron. The upper rooms of the main building would have their iron floors so constructed as to form a rich network, or otherwise ornamented ceiling, to the principal sitting-rooms below. The windows, sashes, blinds, &c., would be also of iron; and not the grates only, but the chimney-pieces likewise. The stairs, also, might be wholly of iron; the risers being of cast open work, and the balustrade of light filigree.

The exterior of the building would exhibit the following leading peculiarities, all of iron. An ornamental gutter cornice, with cast-work antefixæ, and decorative water-pipes. Canopies over the upper windows; and balconies under the same, forming canopies over the lower windows. A projecting veranda before one wing, to serve as a carriage portico; the elevation thereof exactly corresponding with that of the conservatory, forming the

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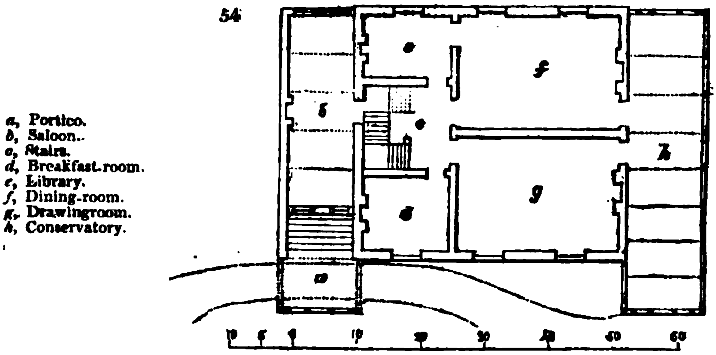

other wing. The chimney-tops might likewise be of iron ; and much taste might be shown in the sashes or casements, particularly those of the conservatory. The entrance-door and side lights, and the large window at the opposite end of the saloon, would also be susceptible of a high degree of richness and beauty; while I might confidently predict a striking general effect, resulting from the harmonious combinations of those individual features which I have been separately detailing.

Thus, we have seen how adaptable is iron, both in a purely useful and a highly decorative sense, to a variety of cases besides those of bridges and other works, public and private, in which (on the mere ground of practical worth) it has been already largely employed. I have before alluded to the daily increasing favour which it is obtaining, as leaving no doubt but that its application will become general. The positive extent of its admission will, of course, depend on the experience to be gained, from many a trial and experiment not yet made, as to how far it is economical on the united principles of first cost and endurance, and how far objectionable on the score of oxidation and other effects of the atmosphere.

I may, however, reckon on remedies being ultimately found for the evils which at first may prevail, and shall, in fine, venture to conclude, that iron will receive a welcome at the hands of taste, corresponding with that which it has received at the hands of science. To this end, let taste *be* taste, not prejudice; and, to determine the "effect which should result to architecture from the general introduction of iron," let us look into the philosophy of Egyptian, Greek, and Gothic design, where we shall find the examples of each proportionally charming, as the nature of the material has had its due influence in establishing the scantling and general outline; or as the imperative adoption of some new feature in design is unenthralled by old habits, and recognised as an independent governing principle. In the perfection of Greek and Gothic examples, we see evi-

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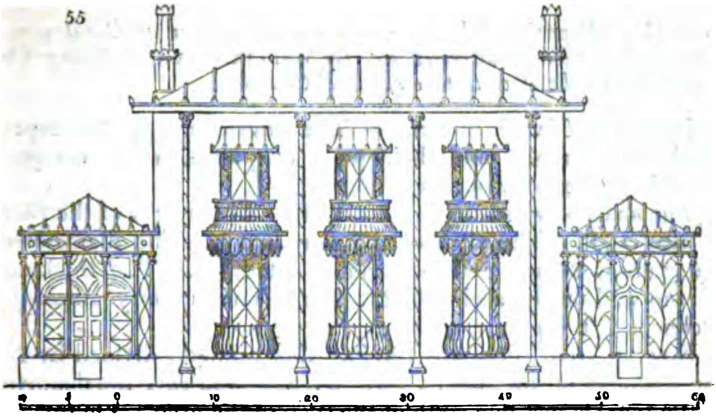


dence to the truth of the canon I would now establish: in the defects of the Roman examples, we find that evidence corroborated. The result, therefore, we should seek to obtain is, a correct translation of the philosophy, not the poetry, of ancient architecture into the iron tongue. The philosophy of architecture (as of every thing else) is universal, and, therefore, translatable; but, as the classical J. H. M. once observed, "You can no more translate the poetic essence, the distinguishing charm, of Homer's Iliad, than the delectable flavour of Lafitte's claret." By parity of reasoning, the critical error of imitating the Parthenon in cast iron would not be greater than the physical absurdity of squeezing Burgundy out of the British grape. The same abstract system of making wines, and of forming architectural principles, may pervade all countries; but the issue, the particular result produced, will differ, as the difference of material, climate, national customs, necessities, and feelings shall dictate.

To sum up, in brief, my opinion on the matter before us, I would say as follows: —

The general introduction of iron into the construction of buildings should no further affect design, than in those particular cases where it conspicuously enters into the ornamental parts of the composition: but, in such cases, it should become authoritative, and not subject; enforcing a regard for the elegant, to the exclusion of the grand; emulating the beauty of the Pointed Gothic outline, or the Greek detail; but avoiding companionship with those elements of sublimity which inform the masses of a York Minster, or with those features of majesty which distinguish a Parthenon.

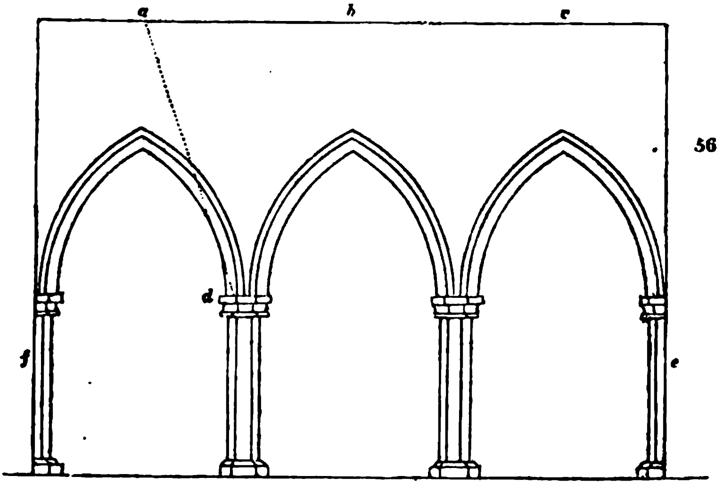
London, March, 1837.

Art. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By William Bland. Essay VII. *Relative to the Architecture of small Churches.*

Hartlip Church, in Kent. — The engraving *fig.* 56. represents three arches, and their piers or pillars, which compose one side of the body of this church.

The span between the piers is 10 ft. The height of the piers is also 10 ft. The shaft of the piers is 8 ft. The diameter of the piers is 20 in.; and the form is octagonal. The thickness of the wall on the arches is 2 ft. 2 in. The masonry above the arches is 7 ft. high.

Now, in 10 ft. there are 120 in.: this number, divided by 20, the diameter of the pillars, gives 6; that is to say, the diameter of the piers is just one sixth of the span of the arch. On turning to fig. 149. (Vol. III. p. 410.) it will be seen that the pointed arch, composed of voussoirs only, just balances on nearly equal dimensions of span and pier; having the diameter of the pier one sixth of the span. Again, in the experiment fig. 141. of the same Volume, it is shown that, when the masonry is carried up to *a b*, the arch will carry double the weight it supported without the masonry. Now, the rise of this arch is 8½ in., the span being 10 in., and the masonry above the rise 3½ in.



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In the drawing of the church (*fig.* 56.), the masonry above the rise is 7 ft., which equals the height of the fourteenth course in the last experiment referred to. From this, it is evident that the height of the masonry has added at least six times to the stability of each arch and pier above the balancing point, that point being called 1, and the strength of the mortar not being taken into consideration; therefore proving the structure to be amply secure of itself. But it is farther strengthened by having the tower as a buttress at one end (*e*), and cross walls, &c., at the other end (*f*). Being thus circumstanced, any one of the arches will carry, at the points *a b*, and *c*, 60 lb.; which equals forty times the weight of one of the piers, and, therefore, proves the durability of this part of the church for ages.

The point *a* is perpendicularly over the crown of the arch beneath; and a straight line may be drawn from that point to the pier, just touching the intrados of the arch, as represented by the dotted line *a d*.

Windows. In the south-west window of Hartlip Church, represented by *fig.* 57., the plan and proportions are as follows: —

The span, or opening, is 20 in. The thickness of the middle jamb is 5 in. The height of the opening to the springing of the arch is 66 in. Now, if each of the above sums be divided by 5, the dimensions of the jamb, the proportions will be thus: — Opening, 4; jamb, 1; height, 13.

On putting the above jamb to experiment, with the arch of the opening resting upon it, and the springing of the arch quite coinciding with the line of the jamb beneath, as represented in the engraving, the arch just balanced firmly on the jamb when it was exactly half the height of the window jamb; consequently, the jamb of the window is exactly double the balancing height of the arch. The jamb is one fourth of the span; and its height is three times the span, and the thickness of the span over.

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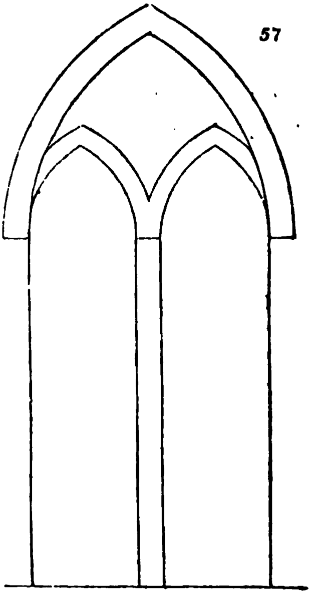

Another window of this church was measured, being the east window of the south chancel. The dimensions were as follows: — span, 2 ft., or 24 in. Thickness of the jamb, nearly 6 in. Height of the jamb, 6½ ft., or 78 in. Now, these sums being divided by the thickness of the jamb, will give the following: — Span, 4; jamb, 1; height, 13; being the same as the former window.

In all the beautiful tracery-work above the jambs of the windows of churches which I have examined, I found that the straight line principle was carefully attended to.

Newington Church, near Sittingbourne. — The engraving *fig.* 58. represents one side of this church: *e* is the tower wall, and *f*, the cross walls, &c.

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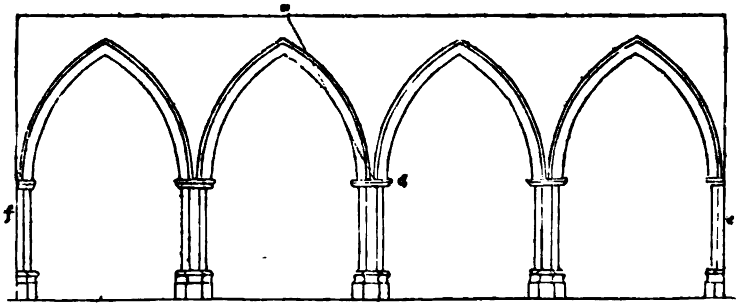


The span between the piers is 13 ft. The height of the piers, 10 ft. The shaft of each pier, which is octagonal, is 7 ft. high. The diameter of the shaft is 24 in. The thickness of the wall on the arches is 28 in. The masonry above the arches is 3 ft. high. In 13 ft. there are 156 in., which, divided by 24 in., gives 6½ in., the proportion of the diameter of each pier to the span of the arch: but the true diameter, according to Ex. 149., Vol. III. p. 410., should be one sixth of the span, or 26 in.: the height, however, of the piers is only 10 ft., instead of 13 ft.

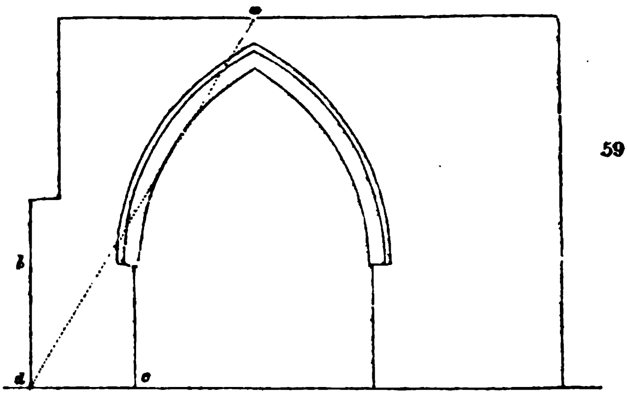
While the proportion of one sixth, in the above-mentioned experiment, gives the balancing point, the same is the case between the diameter of the pier and its height; for 1 in. in the diameter equals 6 in. in height of the pier, or 2 in. to 1 ft.

Now, in Newington Church, the piers are 2 in. within the true diameter, which would require their height to be shortened 1 ft.: but they are shortened 3 ft.; therefore the strength may be estimated as 2 ft. within the balancing point, as given in the above experiment; and which, by another experiment, nearly equals one third of the weight of one of the piers.

The height of the masonry above the arches is 3 ft. In the experiment fig. 141., Vol. III. p. 359., it is shown that, when the masonry is completed up to the dotted line *a b*, the strength of the fabric is increased double; and the height of this dotted line corresponds very closely with the masonry of this church. If, therefore, any one of these arches, composed only of voussoirs, and placed on these piers, will carry one third of the weight of one of the piers, it will, with the masonry above, as represented in the engraving, carry or balance with two thirds of the weight of one of the piers. Now, these arches and piers, being placed abutting against each other, and having the tower at one end, and stout walls with cross arches at the other, are evidently secured against falling.

The dotted straight line *a d*, just touching the intrados, falls on the pier at a distance without its centre; whereas, in Hartlip Church, the dotted straight line *a d* falls on the top of the pier at a distance within the centre.

Fig. 59. represents the main cross arch, over the pulpit, and leading to the communion table, of Newington Church. The span of the arch is 15 ft. The height of the small pier *b c* is 8 ft. The diameter, or depth, of this pier is 6½ ft. The thickness is the same as the masonry on the arch. The masonry above the arch is 3 ft. high.



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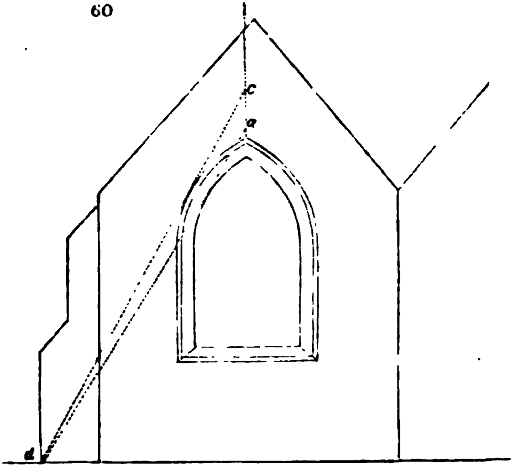
In 15 ft. there are 180 in.; and one sixth of this gives 30 in. for the true diameter of the pier: but the depth of the pier *b c* equals 78 in. Or, the true diameter to the depth of this pier is as 1 to 2½.

In the experiment fig. 68., Vol. III. p. 206, 207., it may be seen that twice the depth of a pier adds four times to the strength. Again, in the experiment fig. 149., Vol. III. p. 410., when the pier is reduced in its height to one half, the arch and pier will carry twice the weight of the pier. A straight line may also be drawn from *a* to *d* (*fig.* 59.), which nearly falls within the voussoirs. Moreover, the pier *b c* is farther strengthened by a cross wall. All these circumstances being considered, this fabric is capable of supporting a great weight on *a*. The test of experiment proved the arch and pier to stand firm under the weight of 60 lb. placed at *a*; consequently, they would carry more: but this was a sufficient test of strength; and this weight of 60 lb. equalled twenty times the weight of the small pier.

Fig. 60. represents an eastern window of Newington Church. The span of the arch is 8 ft. The height of the window to the spring of the arch is 7½ ft. The height of the masonry from the ground to the bottom of the window is 8 ft. The walls on each side of the window are 6½ ft. The depth of the buttress is 4 ft.

60



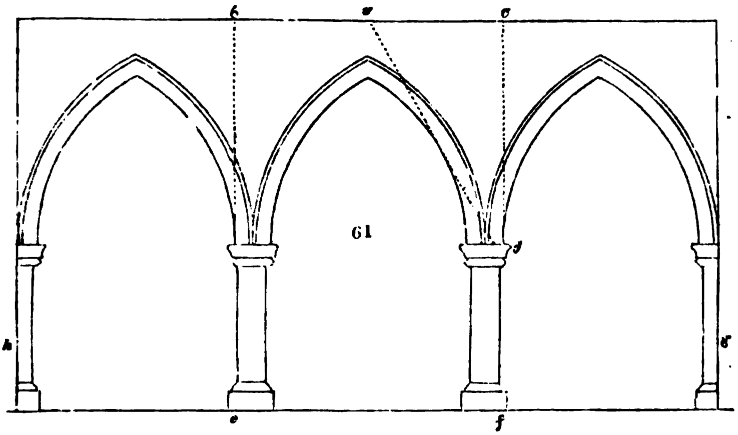
The masonry of this window exhibits the straight line *a d* just touching the intrados, and the straight line *c d* within the masonry; consequently, this fabric will support almost any weight on *c*, and, therefore, will never fall of itself. Its present appearance confirms this, since it looks as strong as when first erected.

Sittingbourne Church. — The engraving *fig.* 61. represents one side of this church: *g* is the tower wall; and *h* the cross walls, &c. The span of the arch is 14 ft. 3 in. The height of the piers, 11 ft. 2 in. The shaft of the pier, 8 ft. 8 in. The diameter of each pier, 24 in. The thickness of the masonry on the arches, 2 ft. 9 in. The height of the masonry above the arches, 4 ft. The piers are, in form, circular and octagonal alternately.

In 14 ft. 3 in. there are 171 in., which, divided by 6, gives 28½ in. for the true diameter of the pier: but the pier is only 24 in. in diameter; therefore it is 4½ in. within the balancing point.

It has been before shown, in the description of Newington Church, that every 2 in. less in the diameter of a pier requires a reduction in its height of 1 ft., to preserve the equilibrium. In this instance, then, as the diameter of the pier is 4½ in. within the one sixth of the span, the reduction in the height of the pier must be 2 ft. 3 in. Now, this sum, taken from the span of 14 ft. 3 in., makes the true height of the pier to be 12 ft.: but the height of the pier is 11 ft. 2 in.; therefore it is 10 in. within the balancing point.

On submitting one arch and pier of this church to the test of experiment, the results were, that, with voussoirs only, the arch and pier carried three eighths of a pound on the crown. When


61

masonry was erected on the arch, equal to the proportions represented in the engraving, and as contained within the dotted lines and the piers *b e*, *f c*, the arch and piers carried on *a* 2½ lb. Now, the weight of one pier equals 1⅝ lb.; consequently, the arch will carry, or balance with, nearly twice the weight of one pier. These arches, being three in number, are, together with their piers, placed between the tower wall at one end, and a cross wall, &c., at the other, and are thus sufficiently secured against falling.

The effects of the pedestal and capital, which project beyond, and exceed the diameter of, the shaft of each pier, are not taken into the calculation in any of the churches here considered. They, however, by their increased base and height, shorten each pier a little, and, consequently, contribute to the stability of the whole structure. The dotted line *a d* falls very nearly on the outside edge of the pier.

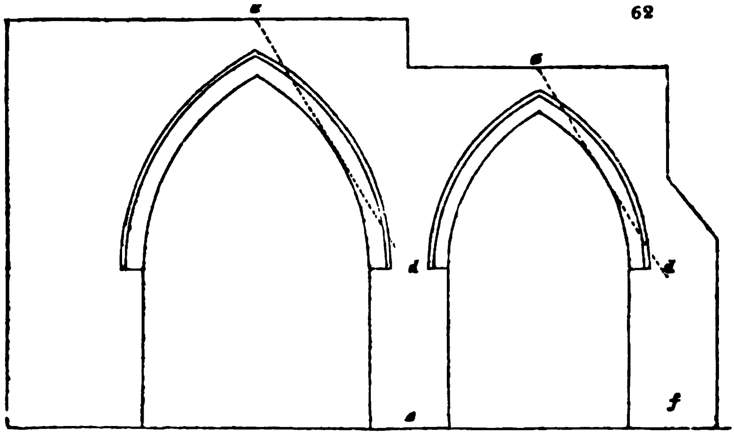
Fig. 62. represents two arches of this church. The larger arch separates the body of the church from the altar chancel.

Relative to the larger Arch. The span between the piers is 16 ft. 2 in. The height of the pier *e* is 11 ft. 2 in. The diameter, or depth, of the pier *e* is 5 ft. 9 in. The thickness of the wall on the arch is 2 ft. 9 in. The masonry above the arch is 3 ft. 6 in.

In 16 ft. 2 in. there are 194 in.; which, divided by 6, gives 32⅓ in., or 2 ft. 8 in., for the true diameter: but the depth, or diameter, of the pier *e* is 5 ft. 9 in.; it is therefore twice the true diameter, and 5 in. over. The height of the pier *e* is 11 ft. 2 in.; therefore shorter than the span by 5 ft.

We have, then, in these two instances of the diameter and height of the pier, great increase of strength to support the arch beyond the balancing point.

62



Under the test of experiment, the arch composed of voussoirs only, and the pier *e*, made, for the sake of convenience, 6 in. or 6 ft. through, instead of 5 ft. 9 in., carried on the crown 14 lb. Now, the pier employed weighed 4 lb.; therefore the arch balanced with three and a half times the weight of the pier *e*. On completing the masonry, to correspond with the drawing, the arch carried 56 lb.: this weight equals fourteen times the weight of the pier *e*.

Relative to the small Arch. The span of the arch is 12 ft. 6 in. The height of the pier *f* is 11 ft. 2 in. The diameter, or depth, of the pier is 6 ft. 3 in. The thickness of wall, and the height of the masonry above the arch, are the same as in the larger arch.

In this span there are 150 in., which, divided by 6, gives 25 in. for the true diameter: but the pier *f* is 75 in. through, or just three times the true balancing diameter. The height of the pier *f* is 11 ft. 2 in.: it is therefore 16 in. shorter than the balancing height. Here, again, considerable strength is gained beyond the balancing point, which is proved by the following experiments: —

With the arch constructed of voussoirs only, and the pier the same as with the larger arch, it carried on the crown 18 lb., or four and a half times the weight of the pier of 4 lb.: and, with masonry above, as in the engraving, the arch stood firmly under 64 lb.: therefore it would have carried more, particularly as the experimental pier was 3 in. within the diameter of the pier *f*.

Having proceeded thus far, let the effects of these two arches resting upon the same pier *e*, be now taken into consideration.

It has been shown that the pier *e* is itself of sufficient firmness to carry the large arch and masonry. It is, however, assisted in its stability against the thrust of this arch by the counteracting thrust of the small arch; consequently, it is ably secured against falling, or being overturned, under common circumstances. And, with respect to the stability of the small arch, the pier *f* has been shown, by experiment, to be of ample dimensions to insure its durability.

Again, both arches have their piers further strengthened by the cross arches and walls of the church, which abut against them at right angles to the thrust of these arches.

The dotted straight line *a d*, in the large arch, falls at the point *d*, on the centre of the pier: and, in the small arch, the dotted line *a d* is within the centre of the pier, at the point *d*.

When treating of churches, the arches and piers contained in them were placed abutting each other in straight lines. Now, in some chapels, and the undercrofts of cathedrals, the arches with their piers are found running in parallel series, and intersecting each other at right angles, in the line of every pier; the object being the formation of a basis for floors above.

ART. IV. *A Word in Behalf of modern Houses.* By W. H. L.

WERE we to believe many persons (writers as well as talkers, and talkers as well as writers), not only is architectural taste at an exceedingly low ebb, both as compared with what it is in other countries, and with what it has been in our own till within the last fifty or sixty years, but even building itself is greatly deteriorated from what it used to be.

It is easy to assert this, nor is it at all difficult, by means of a little dexterity, to make such assertion appear tolerably well supported by facts and instances; these latter being so selected as to throw the whole weight into one scale. This may be done either by invidiously comparing, or *contrasting*, the best works of a former period with very mediocre ones of the present day, to the disparagement of the actual state of architecture among us; or by unfairly estimating what it was by some of the choicest samples, and judging of what it now is either by very inferior ones, or else by buildings of a class altogether different from, and avowedly of far less pretension than, any brought forward on the other side of the argument.

When such a writer as Captain Marryat dashes off an extravaganza on "modern town houses" for the *New Monthly Magazine*, in a strain of undisguised and most *outré* caricature; heaping together all the most preposterous and whimsical incidents his lively imagination supplies him with; we are at liberty to consider it either exceedingly amusing, or dull and overstrained, just as we may happen to relish it. Yet we can no more receive such *facetiæ* as sober evidence, than we can admit the grotesque sketchings of Boz, and the highly coloured Pickwick absurdities, to be accurate portraitures of life and manners. In spite, therefore, of the exceedingly unfavourable view which Captain Marryat takes of modern house-building, I venture to affirm, that, so far from having in any degree declined, it never was at all comparable to what it now is at any former period, either as regards the individual dwellings, or the situation and other circumstances affecting them.

In order to judge the matter fairly, we must compare together houses of the same class and size, and not bring forward such as, though now tenanted by persons not at all wealthier than those who inhabit second or third-rate ones, were considered as of very superior description when first erected. Except, too, in being more substantially built, even these will be found to bear hardly any comparison with the generality of modern houses. By way of direct example, which will be far more satisfactory and forcible than vague general statements, we have, for one class of houses, at least, only to look at Bedford Row, the houses in which were, at the time of their being erected, considered excellent; yet, except in regard to mere size, they must be allowed to be much inferior to modern ones upon nearly the same scale, or even approaching it. Besides being destitute of the slightest pretensions to embellishment (for they are frigidly naked), they have a most mean and meagre appearance, owing to the number of windows squeezed together between narrow piers; and also to the sashes themselves being fixed in ugly wooden borders or framing (architraves they hardly deserve to be called), and hardly set back at all within the face of the wall. One consequence of this is, that, whether really so or not, the walls themselves appear deficient in thickness, and the windows too much exposed. Another great disadvantage is, that the kitchen areas are narrow and dismal.

The same dull, heavy, and uncouth style, only a few of whose defects have been above indicated, prevails in the buildings of the Temple, and those of the other inns of court; the chief difference being, that these latter have ponderous wooden cornices, with here and there an ugly leaden waterspout running down the front of the building. As far, therefore, as taste alone is concerned, our modern-built London houses will very well endure a comparison with those of about the middle of the last century; and, if we go still further back, the *contrast* will be still more to the advantage of the present day. By no means is it intended to affirm that our private houses can lay claim to much praise on the score of durability. They are not intended to last for centuries; which circumstance, if it be matter of censure at all, does not arise from the incapacity of modern builders, but because the cost must be limited to the means of the why do not our architects emancipate themselves from it altogether? Why does not the Institute, if it be really anxious to vindicate the dignity of the art itself, and to promote a right feeling for it among the public (as it is obviously for the direct interest of the profession itself to do), establish an annual exhibition of its own; not one that is merely the fag end, as it were, of an exhibition of pictures, but which should be on an independent and adequate footing? which should, besides, consist of something more than picture-drawings and elevations, and wherein some kind of classification, both as regards the style of execution, and the subjects themselves, should be observed? But *revenons à nos moutons.*

A very cursory examination of No. 1038., *Design for the New Houses of Parliament*, by L. N. Cottingham, will convince any one that the charge which has been brought against Mr. Barry, of having pirated from it, is most preposterous, unless he has discovered the philosopher's stone, and the art of transmuting architectural lead into gold, tastelessness into beauty. The most that can be said in its favour is, that it is not altogether such an extravaganza as Gandy's *British Legislative Mansions*, No. 1035. Although with no pretensions to architectural importance (it consisting of no more than a few piers and railings), No. 1044., *Design for the Entrance to the Old or Royal Well Walk, Cheltenham*, now erecting, &c., by T. Bellamy, is one of the most pleasing and tasteful things in the room; and it proves that, if an artist possess real talent, he will make it display itself, let the subject itself seem ever so unpromising; while, on the other hand, there are many who aim at the most ambitious fancies, huge national buildings, &c., yet, at the same time, plainly show they possess neither the invention nor the ability to design a door or window. In this latter class we may fairly put down Mr. Vulliamy (would that we could as easily put down the whole of the class itself!), who exhibits to us, in No. 1119., the *Proposed new Front for the Royal Institution.* Now, although the building in Albemarle Street is at present of the most homespun description, it has, at least, the negative merit of not being ridiculous; which it certainly would become, and not a little offensive withal, should it ever be *improved* according to Mr. Vulliamy's recipe. There are three ranges of windows, thirteen on a floor; consequently, unless the whole front were to be entirely remodelled, these numerous apertures must determine its character, and, if they cannot be got rid of, ought to be rendered attractive as well as indispensable features. Yet what does Mr. Vulliamy propose to do? By what happy stroke of invention does he think to transform this dowdy in brick and mortar into a piece of Grecian architecture? Why, by sticking up fourteen Corinthian columns against the piers! Really, if we cannot get beyond such vile sophistications and adulterations, such extravagant dulness, we ought either to go to school afresh, or else abandon Grecian and Roman architecture altogether. At any rate, should the Royal Institution accede to this architectural proposal, it will deserve to be formally anathematised by the Institute. One thing is quite certain, that Mr. Vulliamy has not the fear of Welby Pugin before his eyes.

The designs by the new professor of architecture (viz. 1014. 1016. 1022., for a *Metropolitan Hospital*, and 1034., a *Triumphal Entrance to the Horse-Guards*) do not rise above respectability: they are pleasing, but display no extraordinary taste, still less any power of imagination. Gandy, on the other hand, possesses a superabundance of imagination, yet of the most ill-regulated sort, and almost, in fact, to the exclusion of common sense. Were he and Mr. Vulliamy to bite each other, it might prove greatly to the advantage of both; for the one would probably be chilled into propriety, the other kindled into some degree of fancy.

No. 1005., an *Interior View of the Arcade beneath the Viaduct of the Westminster and Greenwich Railway*, by D. Paine, (of which, by the by, there was a lithograph engraving published some time back,) manifests much greater taste and propriety, and cleverness of application, than many subjects which seem to afford far greater scope for design. There is likewise a good deal of effect in the drawing itself, which is more than can be affirmed of the generality of those exhibited this year; for many of the designs are very poor indeed in their drawing, and wretched in their colouring. Sections are prohibited, very properly so, it is to be presumed, as being absolutely unintelligible to the multitude, and altogether superfluous and uninteresting to architects; and interiors might as well be in the same predicament; for, except a few views from old churches, and buildings of that description, there are not above two works of that class in the room; namely, designs for a synagogue. Stay, there is a third, which, the catalogue informs us, is a staircase for a royal palace; but it is placed where it would require another staircase, or at least a ladder, to mount to it, in order to make out what it is. Perhaps we lose nothing by its being so elevated, while the catalogue is a gainer by its being received, along with many other things of the *nos numeri sumus* class, this year a tolerably numerous one. Really, the Academy still requires to have another professorship, and it should appoint a professor of hanging against next season. Of the two designs just mentioned, both of which, it may be presumed, were for the same purpose, No. 1051. *View of the Ark of the new Synagogue in Great St. Helen's*, by J. Davies, is decidedly better than 1125., *Design for the Interior of a Synagogue*, by D. Mocatta; and that, too, both as regards the drawing itself, and the architectural composition. It is, indeed, coloured in a very clever and picture-like manner, more so than almost anything in the room; and there is so much brilliant and scenic effect in the general arrangement, and some of the ideas, that we cannot help feeling pleased with it, though it is not so well studied in all its parts as it might have been; for, taking the features separately, there are some which by no means evince either a correct or an elegant taste.

Among designs adopted for execution, that by Mr. Basevi (1069.), for the front of the Fitzwilliam Museum, at Cambridge, towards Trumpington Street, deserves attention, were it only for the importance of the subject. Although it cannot lay claim to any striking originality, it is a very fair composition, consisting of an octostyle Roman Corinthian portico, with three open intercolumns adjoining it on each side, where it projects beyond the general mass of the edifice, similarly to the Royal Institution at Manchester. The *façade* is completed by a single interpilaster at each extremity. The whole, consequently, consists very nearly of columns disposed upon two lines; a mode which not only produces greater richness, but is a deviation from the ordinary one, of placing a portico against a building. The absence of windows will also give a classical character to this *façade:* yet it may be questioned whether it will show itself to the same advantage as in the drawing; because, as it will face the east, the whole will be in shade during the greater part of the day, and much of the effect here given to it must be lost. Surely, the architect might have contrived to admit light into the portico, either from above or on the west side, so as to obtain some degree of brilliancy in the centre, where the columns would have relieved themselves against a light background — that is, an open vestibule, so lighted, seen beyond them. No. 1096., one of the four designs selected by the University of Cambridge for the Fitzwilliam Museum, by E. Lapidge, a name quite new to me, has considerable merit; and, owing to the statues and sculpture introduced in it, announces itself more distinctly as a public museum. It has also a dome, an architectural feature in which Cambridge is at present deficient; but, in itself, it is not of the best form that might have been selected. This design is more extensive than Mr. Basevi's, and is apparently intended to occupy the entire length from north to south; whereas the other seems a centre, to which wings may afterwards be added. Whether it was this circumstance which occasioned the final decision in its favour, it is hardly possible even to conjecture, there being neither plan nor sections of any kind, from which we might judge which architect had shown greater taste and judgement in the interior. In this respect, it is to be hoped, Mr. Basevi's design will, when executed, be found perfectly satisfactory. *Ad interim*, such hope ought to be tempered with a little mistrust, it being more prudent, in all cases, not to suffer one's expectations to be over-sanguine. Again, I am tempted to ask, Why do not either the Institute, or the architectural profession as a body, emancipate themselves from the leading-strings of such a cross-grained dry-nurse as the Royal Academy shows itself to be towards them; shake off the arbitrary and whimsical restrictions it imposes upon them; and establish such an annual exhibition as would do them credit? Are they so totally devoid of all spirit of independence, as to be content to jog upon a pillion behind the painters? Or does it arise from pusillanimity and a cowardly mistrust? As a mere speculation, such an exhibition might probably not answer; at least, it might be some years before it would even pay its own expenses. What then? Has art no more generous speculations? Is it not only to attempt nothing save what promises to be a profitable ready-money concern, but ought no sacrifice whatever to be made for the sake of promoting its interests?

Leaving those whom it may at all concern, either to answer, or, if they cannot answer, to ruminate upon, the above queries, I will proceed with my examination, or, rather, now hasten to terminate it, by pointing out one or two more drawings, that prevent the Academy's architectural room being this year a mere blank: I might say, worse than a blank, since the bare walls would hardly be so discouraging a sight as most of the things now hung up upon them. Nos. 1093. and 1111., the *North Lodge at Chequers Court, Bucks.*, the seat of Sir Robert Frankland Russell, by E. B. Lamb, show that *con amore* taste and feeling will give vent to, and find scope for, themselves in the most limited subject. So-called picturesque cottages are, for the most part, equally abominations to the painter and the architect; but the one here represented is particularly happy, and not least of all so for the effect produced by the variety of materials and their colours, as well as for the expression of forms. No. 1118., the *Red Maids' Hospital, Bristol*, C. Dyer, is a very good application of the Tudor style. There is also much merit in No. 1133., a *Baronial Mansion in the County of Surrey*, now erecting under the superintendence of B. Ferrey. The gateway tower comes in well in the drawing; and the house itself, which is, like the gateway, of red brick and stone, is of a quiet unostentatious character, with little of embellishment, yet far more pleasing than those overdone attempts at Old English architecture, where showy, but ill-studied, features are put together in such manner as to betray no feeling whatever for the style itself.

I had hoped that Mr. Cockerell would have allowed us to see something of the buildings he is about to erect at Cambridge; but he has not a single drawing this year; neither is there any thing by Barry, and many others who have hitherto generally exhibited; nor has any one ventured to attempt, even upon paper, any specimen of *polychromy*, notwithstanding that is a subject which would seem to have engaged the attention of the Institute. In fact, whatever good the Institute itself may be doing, there is not the slightest manifestation of it here; for, as far as design goes, there is this year a most terrible falling off from the average architectural talent which used to be shown at Somerset House.

ART. VII. *On Public Illuminations in accordance with Architectural Forms.* From Memorandums made in Italy. By HENRY NOEL HUMPHREYS.

[The great want of taste, or rather, perhaps, its misapplication, displayed in the late illuminations for the queen's birthday will give some interest to the following extract from a MS. which has furnished us with articles in two preceding Numbers. — *Cond.*]

ON Easter Sunday, the closing day of the splendid ceremonials of the Holy Week, after the magic music of the Sistina has ceased, and the dress trappings of the interior of the great cathedral, with the wreaths and garlands, have disappeared, there is still another spectacle, which it is, perhaps, worth a journey to Rome to behold: this is the illumination of St. Peter's. The interior illumination, imagined by Buonarotti, which was effected by a single, but vast, illuminated cross suspended from the centre of the dome, is discontinued; for it was found that, in these latter times, instead of the crowd of kneeling pilgrims who formerly filled the arena beneath this splendidly poetic image of the cross, from which the church declares all true light to proceed, the sanctity of the place was profaned by a crowd of lazy loungers; and what, in the eyes of the Church of Rome, was worse than all, principally heretics; and, this evil continually increasing, the custom was very properly discontinued. But, though I acknowledge that its suppression, under the circumstances, was advisable, yet I cannot help wishing that it had been deferred until after my visit to Rome, even though I had been one of the lazy crowd of loungers myself; for it must have been a magnificent sight to see that vast and glittering fane thus illuminated from one grand focus; its towering vault bathed in a blaze of light, whilst each retiring mass along its majestic ailes received, at first, broad and massive gleams, then smaller, though perhaps more brilliant, touches; and, at length, except where some point of a burnished capital, or the rich offering of some favoured shrine, glittered like a star in the distance, all sunk into darkness and indefinable gloom. There must have been a mysterious and poetic beauty in this scene, not to be described by the pen. The pencil of a Martin or a Danby might perhaps, give some idea of the dreamy grandeur of that scene which will be witnessed no more. The day has passed for such displays in connexion with religion; for, to say the best of it, it was but a species of quackery, which the growing education of the age has unmasked. This prying age has seen things *de trop près.* We have thrown open the "Holy of Holies;" we have, in fact, stripped

——— "The mountain of its robe of blue."

and, to speak the truth, many have rushed in, mayhap fools, where the wisest and best had feared to tread. The aggregate of happiness has not yet, perhaps, been increased by these innovations, which are but the little depredations that must necessarily be committed in the grand march upon which the human race has now fairly started; and, though the effects of the grand advance may appear at present doubtful, we must recollect that all is yet imperfect. We are in the state of transition, which must always have its restlessness and its struggles; like the imago, ere it can escape from the pupa case, and assert that glorious liberty for which its previous stages had been but the preparation.

To return to the business of the day: although the interior illumination has been discontinued, that of the exterior and the piazza is still one of the attractions of the "settimana santa;" and, as the sun sank behind the Vatican, and the short southern twilight began to deepen, I quitted my apartment; and, to avoid the scuffling line of carriages in the Via Condotti, I crossed the Tiber at Ripetta, at the hour of "Ave Maria," and, passing under the fortifications of S. Angelo, approached the scene by way of the Porta Angelica, at the back of the great palace.

As the dusk of evening increased, the lamps, which traced out every line of the architecture of St. Peter's, began to twinkle upon the vast dome, now growing dim and blue in the mist of evening; and, as they assumed, as nearly as possible, the same tint as the last streaks of day that yet lingered behind, they produced a singularly beautiful effect, each lamp seeming a perforation through which the sunset gleams were seen; giving the mass a lace-like lightness, which under no other circumstances it could have assumed. But this effect could only be witnessed from the direction in which I had approached, which threw the peculiar light which succeeds sunset immediately behind the building. I slowly quitted this interesting picture; and, passing through the dark arch of the Porta Angelica, entered the *Rione di Borgo* (the quarter of Rome in which the Vatican and the great Basilica are built), and soon found myself in the midst of the Piazza di San Pietro, already crowded with carriages, spectators, and lemonade purveyors: for it had been a sultry April day, of which, in Rome, I felt many as hot as any that occur with us in the height of July and August. The colonnade round the piazza was also lighted, but merely by simple rows of lamps along each prominent moulding, and round each base and capital of its forest of Tuscan columns. This simple architectural illumination has an effect of grandeur in the mass which we can scarcely conceive from the specimens of British illuminations which we have seen; the most splendid of which, from the nature of the various devices employed, destroy the grandeur, form, and magnitude of the buildings they are intended to embellish. They are certainly very brilliant with the profusion ot coloured lamps; but their W. R.s, A. R.s, laurel wreaths, British lions, and cornucopiæ, stars, and crowns, would effectually cut up the finest architecture in the world; and, though the effect may be glaring, even brilliant, a line of street so illuminated could never stand a comparison with one illuminated in accordance with its architectural forms. I never saw St. Peter's to such advantage as on this night, and I never saw the public buildings of London to such disadvantage as when spotted with their crowns and stars, and initials of coloured lamps.

As I stood considering St. Peter's, although I could not but admire the excellent taste of the plan of its illumination, yet I must confess that the *brilliancy* of the effect was not exactly what I had expected; and I became anxious for the darkness to close in, imagining that the effect would be thereby increased; for neither the number nor effect of the lights equalled my expectations, although their disposition was so good. While thus engaged, it occurred to me (as I had been informed) that the illumination was effected *all at once*, at a preconcerted moment; and I was at a loss to imagine how the deep paper lamps, with a light at the bottom, could have been thus simultaneously ignited; or why, if so, the *coup* had been performed so soon, and before it could produce any great effect. I now discovered, upon enquiry and closer examination, that such had not been the case, and that, in point of fact, the present lighting was a mere *ébauche*, or sketch, a slight outline of the highly wrought effect which was to follow at the second hour of night, that is to say, two hours after sunset. This information gave me ample time to move from point to point, as far as the crowded state of the piazza would allow me, and watch the preparations. I found that in front of each statue, on the top of the circular colonnade, a vase of some inflammable material was placed; whilst behind each of these grim saints of stone stood a little imp, match in hand, ready, upon the concerted signal, to set all in a blaze. The same plan was observed with regard to the columns, with the exception that the lights were placed behind; so that, when all was lighted, in front of a brilliant background, the column would appear dark as a mass of the blackest marble, supporting the cornice and statues in vivid light. The same effects of *chiar' oscuro* were, I found, being observed in the *façade* of the main building, and on the dome. I was informed (for, of course, I could not see) that the centres and corners of the different compartments were marked by similar pots of combustibles; whilst the lines of moulding were marked by smaller ones, ignited by a train; and the effect produced with the pillars of the colonnade was to be repeated in the great gallery; the whole to be simultaneously fired at the great signal. This is the manner in which I should like to see such a street as our Regent Street illuminated upon some great occasion, as the style of the buildings would afford ample opportunity for a similar display; and, if the present rapid progress of street architecture continues, every principal line will soon form equal, if not superior, advantages: but, for the present system of illumination, the old dingy brick affords just as good, if not a better, background.*

The piazza became at length completely jammed with carriages; and, as the clocks of Rome at length struck, in every variety of tone of which bell-metal is capable, the wished-for second hour of night, all eyes were turned, as with one impulse, to the great point of attraction. A brilliant light issued, as it were, from the great ball, and, describing a dazzling circle, settled upon the highest point of the enormous cross. This was the signal. In a moment, lights flashed from every part, playing like meteors round the vast cupola, and settling, as by magic, each in its proper place: it was but a breath; and the illumination was complete: one which, I do not hesitate to say, was the finest *coup d'effet* I ever witnessed: the first burst was truly astounding. I lingered long upon the spot, where the unvarying plash of the great fountains, in whose spray the lights were reflected in showers of fiery spangles, formed a fine and hushing accompaniment to the busy sounds of the dispersing crowd. As it grew late, I strolled to the Ponte Sisto, to get the *ensemble* more complete, and was not disappointed in the effect. From Ripetta I had it again, but more distant; and my last glimpse was from the elevated point of the Trinità di Monte, whence, though rather subdued, it had a fine effect, rising like some castle of enchantment beyond the now dark outlines of the quiet palaces of Rome.

London, May, 1837.

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* In the late illuminations in London, the Travellers' Club formed a solitary exception to these remarks; and, though not very effective, was still an approach to that style of illumination which may be termed architectural.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Foreign Notices.*

FRANCE.

M. G. **Abel Blouet**, who has recently been elected an Honorary and Corresponding Member of the Institute of British Architects, is the author of the exquisite work entitled the *Baths of Caracalla*, which he measured and restored during the period of his studies at Rome, as *Pensionnaire* of the French Academy. The great care and accuracy, as well as the taste and knowledge, which he evinced in that work, induced the French government to appoint him the architect to the scientific expedition sent to the Morea after the battle of Navarino. The fruits of this journey have already been published, and prove the judicious appointment of M. Blouet, whose restoration of the Temple of Jupiter at Olympia equals any work of a like nature ever published in this country. About eighteen months since, he paid a short visit to England; and, on his return to France, was despatched to America, to take the plans of the American prisons. On his way back to France, he again passed through this country; and, having expressed to the members of the Institute his strong desire to be associated with that Society, he was elected one of the Foreign Members of the body. We understand that M. Hittorff of Paris is daily expected, and has announced his intention to read a paper before the Institute on the Polychromy of Architecture. — *M. J. B. A.*

Art. II. *Domestic Notices.*

ENGLAND.

The Library of the late George Dance, R. A., Architect of Newgate and the Lunatic Hospital of St. Luke's, in Old Street Road, is about to be brought to the hammer by Evans, and contains some original editions of the most valuable standard works on architecture. We hear that his son, Colonel Sir Charles Dance, has also offered to the trustees of the British Museum six volumes of portraits, drawn by his father, who was accustomed, for his amusement after dinner, to sketch the profiles of his friends who partook of his hospitality. Nobles, divines, physicians, artists, actors, and poets, in fact, all the distinguished men of the day, whether noted for their taste or science, are among the series. There are striking portraits of Hardwicke, Cockerell, Lewis, Mylne, Bettingham, and John Carr of York, architects of the period of Mr. Dance. A memorandum on the back of Carr's portrait states that he was born at Horbury, near Wakefield, Yorkshire, in 1721; lived forty years in York, where he was twice Lord Mayor, a magistrate for the North and West Ridings, and for the county and city of York. He rebuilt the parish church of Horbury at his own expense, and presented the parish with a good organ and ring of bells. This edifice he began in 1791, and finished in 1793: it cost him 10,000*l.* — *M. J. B. A.*

Devonshire. — *The Western Markets at Exeter.* The accompanying medal has been struck to commemorate the erection of the Western Market at Exeter. It is engraved by Mr. B. Wyon; and, therefore, it will no doubt be esteemed as a work of fine art, independently of any interest it may possess as an architectural memorial. In this latter respect, it may be observed, as a remarkable coincidence, that, in excavating for the foundations of the new building, a great number of Roman coins and other antiquities were discovered; and amongst them a medal struck on an occasion precisely similar; viz. the erection of a meat market at Rome by Nero; having on the reverse the representation of a building of two stories high, crowned with a cupola, and inscribed MAC: AUG: This circumstance first suggested the idea of striking the present medal, which in execution greatly surpasses its Roman prototype; and it might be added, that this mode of commemorating the erection of public buildings, besides being warranted by the ancients, is desirable in itself, as being likely to outlast all other records, and as giving employment to the medallic art, which so well deserves encouragement. The Exeter Market has been in use four months past, although some of the accessory buildings are not yet completed; and I hope soon to be able to send you some lithographic plans of the whole structure.—*Charles Fowler. Gordon Square, April* 18. 1837.

The medal is of bronze, and a piece of excellent workmanship. On one side is an elevation of the market, with the words "Meat and Corn Market" over it; and under it, "Founded by the Chamber, MDCCCXXXV. C. Fowler, Architect." On the reverse are the arms of Exeter, encircled by a wreath of oak leaves (the civic crown). Around it are the words "Completed by the Council of Exeter, MDCCCXXXVII."

When we receive the lithographs so kindly promised by Mr. Fowler, we shall probably give engravings of them, and also of this medal: the latter, for the purpose of stimulating other cities to follow the example of Exeter on similar occasions. — *Cond.*

ESSEX. — A chaste and elegant chapel has lately been built on an eminence which commands a very fine view, called Buckhurst Hill, in the parish of Chigwell, near Epping. — *Tyro.*

Haggerstone Church. — Originally, the pulpit stood almost in a corner, against the front of the gallery; but now it has been removed, and placed midway between the two galleries; by which alteration the appearance of the interior is improved; and the voice of the preacher is better heard by the congregation. — *Id.*

ISLE OF WIGHT.— *Building Churches.* Owing to the extent of the population in the Isle of Wight, a meeting was held at the Town Hall, Newport, where a church has not long since been reared, for forming a body in aid of building more churches there. The large saloon which the party assembled in contained some of the rarest specimens of Grecian and Roman sculpture which the late Sir R. Worsley possessed. — *Id.*

ART. III. *Retrospective Criticism.*

EDGE Railways. (p. 257.)—You and Mr. Gordon are quite wrong on the subject of rendering turnpike roads a substitute for railways: it is physically impossible; and any one may be readily convinced of this by a very little reading, except always the "steam carriage projectors." *R. Mallet. Ryder's Row, Dublin, May* 11. 1837.

We do profess to be a master of the subject of edge railways, and are very likely wrong. We should therefore be much obliged to Mr. Mallet to set us right, for the benefit of our readers, no less than of ourselves.—*Cond.*

Warming and Ventilating. —Dr. Ure's article (p. 161.) appears to me to contain more valuable information than all the treatises on the subject which I have ever seen. I trust this paper will meet with all the attention it deserves, and that means may be taken to give it extensive publicity. If Mr. Barry has seen it, he will surely avail himself of it in his arrangements for the new Houses of Parliament, which, on the principles recommended by Dr. Ure, might be made much more certain and efficient than by the plans which have lately been acted on, although they may be better than those which preceded them. —*R. J. E. April*, 1837.

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ORIGINAL COMMUNICATIONS.

Art. I. *Observations on the Modes of warming and ventilating public and other Buildings, with Notes made upon several of these during a recent Journey in England.* By Robert Ritchie, Iron-Founder, &c., to their Majesties, and Engineer, M.S.A.E., &c. High Street, Edinburgh.

The important subject of warming and ventilating buildings has attracted more than ordinary attention since the publication of the evidence taken by a Select Committee of the House of Commons (Sept. 1835), and the experiments recently made (1836) to improve the ventilation of the building used as the present House. My attention, however, had for many years previously been directed to the subject of warming and ventilating. In the year 1830, on the suggestion of Mr. Robison, Sec. R. S. E., &c., I drew up a report on the state of the heating and ventilation of many of the public buildings of Great Britain, which was read before the Society of Arts for Scotland, upon the 31st of March, and 14th of April, 1830. The Society was subsequently pleased to express its high commendation of the attempt I had made to collect useful information, and awarded me its honorary medal. To obtain correct knowledge of the most approved methods which had at that time been adopted, I personally visited the greater part of the public buildings, hospitals, and churches, in the United Kingdom. Unbiassed in my own judgment by any peculiar interest or predilection in favour of any particular process, but ready to approve of heating by steam, hot water, or stove heat, when judiciously applied, and when tried by the test of simplicity in management and salubrity of effect, combined with a thorough ventilation, the result was, that, in 1830, I decided on giving the preference, so far as general purposes are concerned, to heating with the warm air apparatus, modified by Mr. Robison, from the late Mr. Strutt of Derby's original plan. I have tried this process of warming and ventilating buildings most extensively, in almost every part of the kingdom, with great general success. Amongst other buildings may be noticed the Royal Colleges of the Physicians' and Surgeons' Hall, Edinburgh; the Orphan Hospital there; the Bridewell there; the Lunatic Asylum there; and numerous churches, seminaries, and mansion houses, throughout Scotland, England, and Ireland.

From what I have seen going on in England, during a tour made in the beginning of the present year (1837), in the modes of heating public and other buildings, I am sorry to observe that I can perceive no decided improvement, based on a sound principle of science, to have been made since 1830. Truth, in fact, compels me to observe that the art of warming by artificial heat, combined with safe ventilation, has, in many cases, within these few years, retrograded rather than advanced. To ascertain the reality of this, we have only to compare the perfect mode of heating and ventilation adopted so far back as 1807, at the Derby Infirmary, under the direction of the late Wm. Strutt, Esq., made public by the late Mr. Sylvester (1819), in his *Philosophy of Domestic Economy*, with the expensive process of heating now lately adopted at the British Museum. Many equally striking examples could be given, to show that, in the proneness in these times to introduce new inventions, or what are often rashly termed improvements, all the established laws of pneumatics are often set aside, and a thorough ventilating process neglected.

The subject of ventilation has, of late, been so ably treated by several authors, as well as thoroughly sifted by the Select Committee of the House of Commons, that we are the more surprised to find the most glaring deviations from known laws continually being practised in London. The necessity of giving the most careful attention to ventilation, for the preservation of health, has been so ably treated by numerous medical writers (among others, by Dr. Arnott, in his *Elements of Physics*, and in the popular work of Dr. Combe, entitled *Principles of Physiology;* and also by Dr. D. B. Reid), that it may well seem superfluous to say one word on the importance of such a subject; yet I do fear, notwithstanding the admitted truth of the principles laid down, and so generally known, as to the intimate connexion between ventilation and health, that either a great negligence prevails, or erroneous views exist, as to carrying out the details. How else can we account for many of the errors in warming and ventilation, which are almost every where to be seen?

Dr. Ure, in this Magazine (p. 161.), has very ably pointed out the defects of one building he examined, viz. the Custom-House of London. If this building were deficiently warmed and ventilated by the great overheating of the external air, what must we say of hundreds of buildings, heated without any provision for admitting air at all? or when we see the most ample means of allowing what is termed the foul or vitiated air to pass off through the ceiling, and yet not the slightest provision made to admit fresh air, to establish an ascending current, or to change the air of the apartment? To give fresh supplies of heat, without at the same time giving fresh supplies of air, a person, who is aware of the importance of air to health, would think the most preposterous of all absurdities; yet how daily is it to be witnessed, though the least reflection must convince every one who thinks at all on the subject, that a high temperature in apartments may be retained, derived from mere animal exhalation, when the atmosphere is vitiated to the utmost possible degree! Indeed, a comfortable feeling of warmth may exist when fresh air is, for a time, entirely excluded. Hence, the mere giving of heat is no test of a safe process of warming; but is only the more dangerous to health, as the poison deceives as it destroys. Let any one open a small confined cell, containing but a few cubical feet of air (where, if air could find access by a chink, it would be closed by the prisoner within, to retain the heat), and in the morning he will find the air vitiated to such a degree, as almost to deprive him of his senses: and yet the prisoner, on enquiry, will tell you he is warm and comfortable; the vitiation of the air having come on so gradually, that he has hardly perceived it, though he may be overcome with stupor from its effects. No wonder, in such circumstances, disease should be engendered; and that, in ill-ventilated, or, what is nearly the same thing, imperfectly heated, schools, jails, and hospitals, as Dr. Combe states, the result is, an extraordinary degree of mortality, from fevers and other diseases; to which may be added the known prevalence of gangrene in ill-ventilated hospitals.

No error seems more common than the supposition that, if air be admitted by a door or a window into an apartment, the ventilation is complete; forgetting that air, like other fluids, can do no more than fill a given space, as liquid does a bottle; and that it is impracticable to admit fresh air unless means be provided for the escape of that for which it is to be substituted. Therefore, no process of warming and ventilating can be perfect, unless provision be made for establishing a constant and uniform current; or, in other words, the renovation of the mass of air of the apartment. In our ordinary dwelling-houses, the renovation of the air in apartments is simply and salubriously kept up, to a great extent, by our ordinary fireplaces; for, just in proportion as the fire burns brightly, does the rate of circulation increase. Hence, whatever may be said against the waste of fuel by the current of heated air passing up the chimney, and the inequality of temperature produced in an apartment by the radiant heat of the fire; yet, unless apartments could generally be warmed by the talent of a Strutt, no simpler or more healthy process of heating can be introduced than a well-constructed fireplace, realising the comfort of an Englishman's fireside. But, in almost every case where the real comfort of a dwelling-house of any size is sought after, the ventilation by fire heat should be combined with that of air moderately warmed, in order to prevent the rush of cold air into the apartment to supply the combustion every time the room doors are opened; and, in truth, to give air to keep up the combustion of the fire. Every well-constructed house ought therefore to be so contrived as to admit a large supply of air, operating nearly at all times, independently of doors and windows; and, as this air, in winter, should not be admitted cold, it must be previously warmed to a tepid state, so as not to injure its purity and freshness. To this point my attention has been directed for years; and it has been my aim to construct an apparatus which, while warming a large volume of air to a moderate temperature, should require no more attention in the management than the ordinary run of attendants can be expected to give.

In houses which are not of sufficient magnitude to justify the erection of an apparatus, the nearest approach to the beneficial results arising from one is, to have a communication between every room and the staircase, even when the doors of the room are shut. This may be effected by a horizontal opening [see the section by Mr. Saul in Vol. I. p. 234.] over each door, concealed by its architrave. There should, at the same time, be air-flues in the ceilings of each apartment, for the escape of air, independently of what will be carried up the chimney.

I am justified in expressing strongly my opinion on the necessity of combining ventilation with heating, by observing the method adopted in heating many of the public buildings in London and elsewhere. I may first allude to the British Museum, as it is a building thrown open to the public, and on which so much has been expended. A great part of this building was formerly warmed by air-stoves, which, I believe, were disused from the difficulty which was found to exist, to fall upon any plan to prevent the air bringing in with it the sooty particles with which the London atmosphere is saturated. In consequence of this, the external air was shut off, and the air of the building itself used as the sole heating medium; the air (as in the Elgin and Egyptian galleries) going down to the hot-water apparatus to be heated, and being returned again to the apartment. This hot-water apparatus consists of cases filled with hot water, among which the air circulates, and is heated. In the Library, the same process goes on, with a different apparatus; and, in the large galleries now in the process of completion, the hot-water pipes are merely placed in coils upon the floor, without any provision whatever for admitting fresh air to be heated. How such a process of heating can be possibly adopted in a building devoted to the noble purpose which this is seems inexplicable: instead of improving the process of heating, it is retrograding. If the first was defective from over-heated air, still there was a chance that air sometimes pure should be admitted. At present, the whole air to be heated is admitted from the doors or ceiling; consequently, no uniform current can possibly be established. If indeed, there existed the means of entirely changing the air of the apartments every day, there would then arise less danger from such a mode of heating; which, though it may occasion no inconvenience to the casual visiter, cannot fail to injure the health of all those who daily respire such air; and, so far as my enquiries led me, I am impressed with the conviction, that the daily attendants in the house must soon suffer in health from living in such an atmosphere. I was very much struck with the force of this when I examined the Print Room. In 1831, Mr. Smith (whom I knew), who had charge of the prints, was very full of a new method of heating with hot water, as the room, though lofty in the ceiling, has no fireplace or current of air through it (the lights being from the ceiling). I took the liberty of suggesting the necessity of combining the heating process (which consisted of large cases filled with hot water, standing on the floor, and heating the air of the apartment) with a thorough ventilation. In April, 1837, I found Mr. Smith had been dead some years, and his successor also was dead. The present gentleman in charge I did not see: but, if danger existed before, greater does now, as the old hot-water apparatus has been removed, and a new coil of pipes, at a much higher temperature, substituted. When the new coil of pipes was placed, a skylight above appears to have been opened; but no means have been established for creating a current of air; unless an opening, of most inadequate dimensions, be intended for that purpose, which, as it may serve more to annoy than to ventilate, will probably very rarely be used.

In the present Library, the confined stagnant state of the atmosphere is severely felt, from the circumstance of there being no thoroughfare through the gallery, to change the air admitted by the door at one end of the long apartment.

I may here notice another instance, of still more recent date, where the laws of physical science seem to have been equally neglected, and where the evil effects may be much more serious than in the former case: I allude to the City of London School, Milk Street, Cheapside. This elegant building has been erected for the education of 500 boys, sons of freemen of London, where an excellent system of education is introduced. I wish I could say as much for the method of warming and ventilating; but, though I found the class-rooms amply supplied with hot-water pipes, at the highest temperature to which the furnace-man could raise them (with fuel heaped on, like a fireman feeding his engine boiler), there was not a breath of air admitted to these class-rooms, but what came in by the chinks of the doors, or by the windows when opened. Dr. Combe has so pointedly alluded to the danger of ventilating highly heated apartments, filled with people, by opening windows, that I need hardly allude to the absurdity of such a method being the only one provided for changing the air of the room. Though I visited the school early in the day, when the air must be supposed to be in its freshest state, yet I was quite sensible of the want of circulation, and the consequent vitiation of the atmosphere. When the injurious effects of breathing long an impure and stagnant, but highly rarefied, atmosphere are considered, the danger to youth of such a mode of heating must be strikingly manifest, as well as its probable effect on the health of the masters of the institution. When such a defective mode of heating and ventilating is contrasted with what was done in the wards of the Derby Infirmary more than twenty years ago, we may almost doubt the very evidence of our own senses.

But it is not only in this instance that the same absurdity is manifest: churches, colleges, schools, hospitals, museums, dwelling-houses, and hot-houses are all indiscriminately heated by the same process, without once taking into consideration, that what may be very useful in one case, may be extremely injurious to health in another.

In numbers of churches which I have examined, not only in London, but in Liverpool, Manchester, and various towns in the north of England, I have found them heated by pipes filled with hot water at a high temperature, without the slightest provision (except in one case, at Liverpool) for admitting any fresh air whatever. When the fact is known, that 1000 persons (which is only a moderate congregation) will destroy 300,000 cubical inches of air per minute, or, in other words, that each person vitiates 300 cubic inches per minute; and, according to Professor Faraday's evidence, that a man ought to be supplied with from ten to twenty times the quantity of air vitiated by him, to keep the atmosphere he breathes in a pure condition; one may easily surmise the great quantity of atmospheric air at a low temperature requisite to be admitted to keep up a healthy ventilation, without the necessity of keeping up the temperature by exhalations from the living body. In one of the chapels I examined at Liverpool, I found it heated by but four small gas stoves, drawing the air from the chapel. It is easy to imagine the injury done to the atmosphere by this mode of heating, when one gas burner will produce more carbonic acid than six or eight candles. There is no place where deficiency of ventilation and imperfect heating are more manifest than in a church, particularly during the afternoon service; when, in most churches, the air is found to be languid and heavy, inducing drowsiness, headach, and often, in delicate persons, faintness; all which symptoms arise from the corrupted state of the air; the deficiency of the temperature having induced the door-keepers to close the doors when the first service was over, to retain the heat, and they being quite unaware that they were retaining with it the impure atmosphere produced by the respiration of the people in the morning. It is true that, in many of the churches which I examined, I found large apertures in the ceiling, said to be intended for letting off the heat; and, when the church doors are open, doubtless there will be forced upwards a portion of the impure air in the church: but these apertures cannot be effective unless there is at all times, while the process of heating is going forward, an ample supply of air admitted below.

It is evident, from what has been stated, that any mode of heating a building, such as a church, filled with people, without access of fresh air, as well as fresh supplies of heat, must be injurious. The greater the heat, the greater will be the evil; and, so far as the mere principle of heating is concerned, it might be effected more safely with hot-house flues than with highly heated iron pipes; inasmuch as the radiant heat of the former would be less liable to scorch the animal and vegetable matter floating in the air, and coming in contact with a highly heated surface, and producing disagreeable effluvia. The convenient form of these iron pipes, however, gives them an advantage in practice, and induces those requiring them to put up with some inconveniences in their application. Where a building is not occupied by people, and where mere heat is required, without a renovation of the mass of air, such a form of heatingmay be useful.

It appears to me that the combination of ventilation with heating has never been half appreciated in mills and manufactories. In all those that I have examined, the mode of admitting the cold air is defective, it being principally by the window; while the high temperature kept up by the steam-pipe passing through the different floors makes the want of a steady current of air entering more sensibly felt. There exist so very many obvious reasons for heating cotton mills by the present mode of steam pipes, that it does not appear likely to undergo any material change; but, as Dr. Ure has so highly praised the system of ventilation generally adopted in them, I can only say, having had an eye on these matters, since Mr. Buchanan, in 1815, published an account of Snodgrass's *First Process of heating Mills by Steam*, I have observed very little decided improvement in their ventilation; and, though I am willing to subscribe to a good deal of what Dr. Ure states in praise of the introduction of the ventilating fan, yet, until there is combined with the drawing off the air from the house by the fan, a proper plan for supplying each floor with air to be heated, and then drawn off, the ventilation cannot, in manufactories, be viewed as perfect, or, though improved, held out as complete.

I was much gratified to find Mr. Strutt's mode of warming and ventilating had been introduced by that gentleman, with great success, in both his green-house and his vinery at Derby. This point is well deserving of the attention of the horticulturist. The gardener of the present proprietor, Edward Strutt, Esq., M.P., informed me that nothing could work better than this system: he preferred it either to the heat of brick flues or iron hot-water pipes, both of which he had tried; but he could raise better grapes, and keep his plants in finer condition, with the warm-air apparatus than either. He avoided every risk of scorching, by sprinkling water frequently and plentifully on the cover of the air-flues, to produce a gentle evaporation, keeping the inner surface of the glass in a constantly dewy state; by which an excellent climate was produced. Indeed, we could not but be sensible of the freshness and perfect freedom of respiration experienced in these houses, as distinguishable from the confined stagnant air to be found in houses heated with flues or water-pipes; and, when it is considered that the object of having a high temperature is to approach the heat of the south, where the thermometer indicates a high degree, with ample presence of fresh air, this method of heating must at once appear to approach much nearer to nature than any of the other forms of heating which have been so long popular. It does, however, require attention; but, I was informed, not more than other modes; while the heat can easily be retained during night. The construction of the apparatus is, however, the most important point to be attended to, in order to prevent any risk from the sudden rising and overheating of the air.

I have already alluded to the admirable plan of warming and ventilating introduced by the late Mr. Strutt in the Derby Infirmary, and in his own house near that town, a plan which has stood the test of thirty years of experience with undiminished success. The Derby Infirmary, in the year 1837, as it was in 1807, may fairly be viewed as a masterpiece in domestic economy. Here every thing really useful in contrivances for domestic comfort has been brought into daily operation. Steam performs its silent work, and is applied to purposes which task human ingenuity, and are yet unrivalled in simplicity; and here may be seen the operation of the most profound knowledge of natural philosophy, applied to the purposes of practical utility. The general arrangements for the ventilation and warming of the house evince a thorough knowledge of that very principle of the change or renovation of the air upon which so much has recently been said before the Select Committee of the Commons; and the wards are as free from the least taint as the most wholesome apartment; while the total absence in this infirmary of gangrene and erysipelas is a manifest proof of the perfect ventilation kept in every part. Let any medical man contrast the atmosphere of this house with, for example, that of Manchester; and what must be his opinion of the difference? At Derby, either in winter or summer, by night or by day, the same perfectly operating system of ventilation goes on: the air of every ward of the house is in a constant process of change. In winter, the warmed current of air flows in, and as certainly flows out, carrying upwards with it every noxious exhalation. In summer, the air is cooled easily without a freezing mixture; and, by the happy availment of simple atmospheric pressure, aided at all times by the prevalent wind, it is nearly impossible that the ventilation can be impeded; and, even in calm weather, if there is a breath of air, it must be conveyed through the wards.

Justly praising, as I do, this well-arranged system of ventilation, I am most unwilling to contrast it with other modes now adopted, though I fear they would lose much by the comparison; not because the greatest attention has not been paid to the very point here alluded to, but because, often, in seeking after too much, simplicity is overlooked, and pneumatic principles confounded. I may be permitted, however, in perfect fairness, to contrast the principle of ventilation adopted at the Derby Hospital with the experiment which has just been made to improve the ventilation of the House of Commons. While I do this, however, I cannot but subscribe my meed of praise to the gentleman under whose direction and advice these experiments have been made, viz. Dr. D. B. Reid, who, in his evidence, as well as in the highly interesting printed *Remarks* he has published, has laid down principles as to general ventilation that cannot be controverted, based, as they are, upon reason and science. Though far from being for the first time brought before the public, he deserves thanks from the community for bringing them so prominently forward. On the idea of giving the means of a constant change or renovation of the air, more than twenty years ago this principle was carried into operation, and made public, by Mr. Strutt. A hundred inventions have since been made; yet so slow is the progress of sound philosophy, compared with the empiric puffing of trading patentees, that plans and principles that might be adopted by all are laid aside for the speculative contrivances of the day. No better an illustration of this can be given, than the fact that, in the town and neighbourhood of Derby itself, instead of the excellent inventions of Mr. Strutt being in general use, there may be found both churches and other public buildings heated without any admission of air whatever. Though the principle of Dr. Reid is not new, the details are; and these I shall shortly consider. Dr. Reid's plan is now carried into effect: the external air is admitted very amply; the provision for warming it seems abundant, and the general arrangement good. The first point that seems new (though I have seen it elsewhere) is the perforation of the floor with three eighths of an inch openings, the whole being covered with hair-cloth. This seems to me an improper mode of admitting either cold or warm air; as the strength of the entering current is not only completely impeded, and almost rendered nugatory, by the hair-cloth, but this hair-cloth must speedily be impregnated with dust from so many feet passing over it; and, if there is any current at all, the dust must pass upward every time it is touched, and enter the tracheæ of the honourable members. If there is no current to do this, then the principle is destroyed, as the entering air will not have sufficient force to remove the heated air above. But, it appears to me that the current can never be very strong, from the manner in which the force of the air is broken and dissipated, while it wants all the power of the current established by the flue at Derby, to catch every breeze, from whatever point it blows. The warm air passes off from the ceiling by corresponding perforations to those below, and is collected in a horizontal chamber, whence it descends by a vertical shaft to the furnace placed at the bottom of the air-shaft, which is built like the chimney of an engine, 100 ft. high. The grating is placed a few feet from the bottom of the shaft, and is above 9 ft. in diameter; the shaft being 11 ft. inside diameter at the base. The grating at the bottom of the air-shaft will contain from 8 cwt. to 20 cwt. of coke, which is used as the fuel; and a plentiful fire is kept up, for the purpose of drawing down the foul air collected at the ceiling by the vertical shaft, and passing it up the air-shaft at a high temperature.

From this, it will be at once perceived that the whole ventilating process is entirely artificial, and that just in proportion as the fire in the air-shaft is kept up, so the current will be increased, and the foul air extracted. In truth, by this arrangement every member in the House is entirely dependent for ventilation on the person in charge of the furnace; and the members would do well to have an officer appointed to see that he does his duty; for, should the fire get languid, as coke is burned as fuel, the heavy air might regurgitate up the vertical shaft; or, if this did not happen, the foul air in the collecting ventilator above would remain suspended, as it could have no natural bias to descend the shaft, unless drawn down; and there are no means by which it can escape to the outer air from the ceiling. So that, if this ventilating process be contrasted with that practised at Derby, we shall find that there, without the least artificial means of keeping up a fire, the foul air from a dozen apartments passes continually and steadily off, without the least chance of regurgitation. The very ingenious and, no doubt, well considered process of Dr. Reid seems too complicated, and much too expensive, to come into general use. In the House of Commons, by the careful working of the details, it may be found to give satisfaction; but I should be afraid to leave the details entirely to the charge of ordinary attendants. No process of ventilation can be, indeed, deemed perfect, that is not arranged to go on, in a great measure, independently of attention: at all events, the ventilating apparatus should be under the control of those who are subjected to breathe the air ventilated. Dr. Ure, in his recent paper (p. 161.), observes that, "in ventilating crowded apartments, such as the Houses of Parliament, instead of having recourse to chimney draughts, as has been hitherto the invariable practice, and which operates by pumping out, exhausting, or attenuating the air, we ought, on every principle of sound physiology, rather to increase the density and spring of the atmosphere, by throwing in a continual current of pure air, brought to a proper degree of temperature and moisture in a chamber of preparation." From these remarks, it would appear that Dr. Ure disapproves of the method Dr. Reid has adopted of drawing off the air of the house by a chimney draught.

I cannot subscribe to the opinion which Dr. Ure has so strongly given against the method of heating the Custom-House. From the examinations I made of it, it seems to me that several of the evils he attributes to highly heated air entering the house, arise from the defective state of the furnaces themselves; which having given way also, the carbonic acid gas from the fuel escapes into the house, along with the current of air heated. This at once accounts for the unwholesome effects he perceived, without the supposition that the warm air, which is the external air heated, could produce such serious evils. There is no doubt, from the construction of the heating apparatus, that the warm air must get to a temperature much too high for salubrious effect; still, as there is a large supply of atmospheric air provided to be heated, I cannot suppose it possible that any very serious evil could result, unless from the cause I have stated, of the carbon of the fuel escaping into the warm-air chamber. This effect is still palpably manifest in the Examiner's Room; and, if this is fact, it at once destroys much of the argument of Dr. Ure against air being heated by passing over iron surfaces. Dr. Ure alludes particularly to the danger of stoves overheating the air;

but the very ingenious invention of Dr. Arnott of Bedford Square must satisfy any one that the air can be heated by passing over a metallic surface heated by fuel, as safely and as purely as when either heated by steam or hot water. Dr. Ure has dwelt forcibly on the advantages to be derived from the use of fanners; but another ingenious contrivance, on the same principle, is now in the process of erection at the Bank of England, under the direction of their engineer, Mr. Oldham, formerly of Dublin, who introduced the same method of heating at the Bank of Ireland. The plan consists in forcing the air, by an air-pump worked by the steam-engine, through the interstices of iron cases filled with steam. The external air is introduced at one end of a conduit (not above a foot square); and, after passing through the heating process, enters a vertical tube, and is blown off right and left into cases for drying the bank notes. At present, the experiment is confined merely to mechanical purposes; but I believe it is intended, if it succeeds, to apply it to the heating and ventilating of the rooms. The Directors' Room, at the Bank of England, is heated by a large mass of coils of hot-water pipe; but the closeness has proved so excessive, combined with the heat, that the use of it has been entirely given up, and it is intended to remove it, and to leave the heating entirely to the open fires.

The very large room of the Bank, in which so many clerks sit, seems very highly heated, by the heat radiating from so many persons. The only fire heat in the room arises from a few open fireplaces, without which the want of ventilation would be dreadful: as it is, the clerks are under the necessity, from the defective ventilation, of reinhaling the vapours emitted by the lungs of themselves and their neighbours.

To carry out the views recommended in this paper, it has been my object, for years, to construct an apparatus with such an extent of heating surface as, while it produces the effect of warming in large volumes the atmospheric air to a tepid and genial heat, should be simple in management, not liable to be put out of order, and applicable, not merely to one particular building, but generally to all.

As there are so many inventions for heating buildings constantly brought forward, and so much weight is always put on the invention itself, generally rendered more important by means of a patent, without the least consideration that a really good invention may be rendered utterly useless, if not sometimes injurious, when improperly applied; and as the numerous contrivances introduced are no sooner brought forward than laid aside for some other invention; I think I cannot conclude this paper better than by giving the opinion of a gentleman who has paid much attention to the subject of warming and ventilating, and who has had ample opportunities of becoming acquainted with most modern inventions, and with their practical bearing.

Letter from John Robison, Esq., Secretary to the Royal Society of Edinburgh.

10th April, 1837.

Sir, In reply to your enquiry as to my opinion of the relative advantages of the different forms of apparatus for warming domestic and public buildings, I beg to say, generally, that I hold that apparatus to be the best, which, by affording a large supply of air at a very moderate temperature, gives the means of constant change and renovation of the mass required to fill the space which is to be heated.

Almost all the insalubrious and disagreeable effects experienced from the use of stoves arise from the heating surfaces being too small, and at too high a temperature; hence, in all those forms of apparatus where a small supply of air at a high temperature is employed to heat a building by being mixed with the colder air admitted by other sources, these evils are experienced in a greater or less degree according to circumstances. If the heating surface be of metal, and very hot, the passing air is partially vitiated by the oxidation of the metal; and disagreeable effluvia are extricated from the particles of animal and vegetable matter which are always floating in the atmosphere. This latter effect is sensibly felt, even at the comparatively low temperature of water boiled under high pressure, as in Perkins's system of small pipes; which, however, is far less objectionable than many others of the forms of apparatus at present in use.

Where the first cost, the large space required, and the expense of management, would not be considered insuperable objections to its adoption, I have no doubt that a largely developed apparatus of pipes, heated by steam of *atmospheric pressure*, would be the most salubrious and agreeable; but the objections, both of an economical and of a practical nature, are so great, that there are few situations in which it can be introduced with propriety. The system of heating by the circulation of warm water (at atmospheric pressure) is liable to many objections in execution, except in the single case of hot-houses, where mere warmth, without much change of air, is all that is required.

On the whole, I do not think that any of the systems now before the public combines so many advantages as the modification of the stove of the late Mr. Strutt of Derby, of which you have yourself had so much experience; as it, when sufficiently developed, and when its cold and warm air flues are properly executed, is the most effective of any with which I am acquainted, in furnishing *a large volume of slightly warmed* air; and in this way is the most salubrious; as, while by its means the proper temperature can be given to a building, a continuous change and renewal of the air may be attained.

The experience I have had of stoves on this construction in two houses I have been dwelling in, during the last fifteen years, has not led to any alteration in the plan, except in diminishing the size of the fireplace; and in one which I am about to order for a new house I am now building for myself, although I shall considerably increase the quantity of surface (to adapt it to the larger space), I shall make no other change, being perfectly satisfied that I can get nothing more efficient in the result, or of easier management by ordinary servants.

When circumstances admit of sufficient developement being given to the stove and the air-flues to furnish a large volume of air, its temperature, *as it issues* from the stove, should not be above blood-heat: and it will then not be too greedy of moisture.

I am, &c.,

Mr. Ritchie, High Street. JOHN ROBISON.

[WE shall be much obliged to Mr. Robison, or to Mr. Ritchie, if either of them will supply us with plans, sections, and all the necessary details and instructions, for carrying the last improvements on the Derby stove, made by Mr. Robison, into execution. Having had our own house heated by a Derby stove, put up under the direction of the late Mr. Sylvester, we certainly have considerable objections to it in a small house; and we are therefore not only particularly anxious to see how far Mr. Robison has removed these objections; but to be able to form an estimate of the merits of the improved apparatus, as compared with one for heating the atmospheric air before it enters the house, between numerous thin plates of hot water. This mode has been carried into execution in several houses in London by Mr. Manby; and we hope soon to be able to give an account of it in this Magazine. — *Cond.*]

ART. II. *Candidus's Note-Book.*

Fasciculus VII.

> "Sicut meus est mos,
> Nescio quid meditans nugarum; et totus in illis."

I. THE exhibition of Etruscan tombs, now open in Pall Mall, is exceedingly well worth visiting, not only for its extreme curiousness, and that of the objects it contains (to say nothing of the singular contrast they offer to the bustling world without doors), but also for the many hints to be derived from it, especially in regard to planning and fitting up a suite of small and low cabinets for articles of virtù, books, &c., within a space too low and narrow to admit of any other kind of architectural pretension or display. The chief drawback is, that these fac-simile representations of the original tombs, which contain, however, many of the works of art discovered in the tombs themselves, may be seen without the least trouble; and, of course, their *come-at-ableness* detracts astonishingly from the interest and wonder they would excite, had we to travel a thousand or two miles to behold them. Distance is a great magnifier of the wonderful. Even a lion, in a menagerie, hardly looks like a real lion; and I am inclined to believe that, could the Parthenon be removed to London, the chief wonder it would excite would be, that travellers should have found any thing extraordinary in it at all. If such were not in some degree the case, no doubt some one would have thought, ere this, of getting up some kind of exhibition, to show one of the houses of Pompeii, both in its present state, and as restored to its original condition, with all the articles of furniture for which any authority is to be found. Something of the kind might, without much difficulty or expense, be attached to the grounds of the Coliseum in the Regent's Park; since, as all may learn from the exhibition of the Etruscan tombs, a mere framing, consisting of thin double partitions, instead of solid walls, would answer the purpose; and papering and painting would do nearly all the rest. For a Vauxhall, again, a series of open cabinets, decorated *à la Pompeii*, would be far more in character with such a place of amusement, than the ugly dingy holes now termed "boxes."

II. No better situation, I conceive, offers itself for the Wellington statue about to be executed by Chantrey, than the summit of the arch leading into the Green Park, which was originally intended to be surmounted by some decoration of the kind. Were there nothing else in its favour, economy would certainly decide for its being placed there, since all expense for a suitable pedestal and its foundation would be obviated, and the whole of the funds would go towards the statue alone, which might, therefore, be upon a rather grander scale than could otherwise be afforded. As regards locality, to say nothing of the vicinity to Apsley House, this would be preferable to any of the other sites proposed; for on that spot the statue would prove a very effective ornament to one of the principal entrances into the metropolis. Besides which, entering into combination with the arch, it would form a much more imposing object (of a kind, too, of which we have as yet no example), than if merely placed upon a pedestal; while, on the other hand, the arch itself would acquire additional dignity and importance. Perhaps, it will be objected, that, so placed, the statue would look too much like a mere ornamental accessory to the arch; not, as it ought to be, sufficiently conspicuous of itself. That, however, would depend entirely upon its relative magnitude: a figure, not much larger than life, would, of course, appear insignificant, or, at least, too secondary. It would require to be of such dimensions as would impart to it both consequence and effect. I should apprehend that one about the size of the statue of the Duke of York, on the column in Carlton Place, would appear a very noble object, if placed at no greater a height than the summit of the gateway alluded to. Whether, if so placed, the statue would suffer by comparison with the bronze one nearly opposite in Hyde Park, is a point for consideration; for it certainly ought not to appear small by contrast with the latter. The chief objection would be that raised by the majority of the subscribers; who would, doubtless, insist upon their Wellington statue being placed somewhere in the city: for on such matters people are apt to be not a little pig-headed, and to stand up most pertinaciously for what they consider the interest and dignity of "our own parish."

III. If there be any species of embellishment in particular to which the Italian style can lay claim, and in which it has displayed much and considerably varied effect, it is in rusticated work. Although the name given to it is not intended to convey any such idea, it is susceptible of being rendered not a little decorative, as well as expressive of strength. Yet at present it seems to have fallen into nearly total disuse among us; for, if any mode at all of rusticating be now employed, it is that of the French school, which consists only of horizontal stripes; the effect of which is as poor and unmeaning as it is monotonous. Of this last-mentioned species an offensively striking specimen is furnished by the Goldsmiths' Hall, where not only does it contribute nothing towards the expression of strength and massiveness, but is positively at variance with all the rest of the design; which, together with the richness, has also the heaviness, of the modern Roman school. On the other hand, the back front of the Travellers' Club-house is a happy example of what may be accomplished in the way of ornamental finish, by rustics and rusticated surfaces. They are also applied with a singularly pleasing and almost delicate effect in the stone piers of the railing before the College of Surgeons, where the rusticating forms a kind of tablet, or raised face, tooled, and slightly projecting beyond the plain border which surrounds it. Such tooled surface, it should be observed, is altogether different from that coarser hatched work usually employed for bossages or "rough rustics." Rusticating in various ways, in the different stories, might occasionally be resorted to very advantageously for an entire front, and would admit of great diversity, and numerous combinations.

IV. It is almost next to inexplicable that so very little should have been done towards making us acquainted with the interiors of buildings, either in foreign countries or our own. Let us open any work professing to display the principal structures of Paris, or any other city, and, most likely, out of a hundred subjects, we shall meet with barely half a dozen interior views; and even these will be nearly all of one class, namely, churches; as if there was neither novelty nor interest in any other places. What renders this all the more provoking, as well as unaccountable, is, that not only does the draughtsman thus pass by subjects that would be perfectly fresh in themselves, and which are frequently far more deserving of being represented than those which are usually given, but he passes by such as are comparatively little known; because it does not often happen that even tourists visit the inside of a building more than once, and then generally very hurriedly, considering how very much more there is to be examined than in a mere *façade*, which is no more than the side of a single room; that is, it consists, like the latter, of only a single elevation. Most assuredly, it cannot be urged that the descriptions which tourists and travellers give us of the interiors of buildings are so very copious and exact as to render drawings of the same kind almost superfluous; because it so happens that they too are no less shy than draughtsmen of touching upon such matters. It may be questioned whether, exclusively of churches, one could collect fifty tolerably distinct descriptions of the kind alluded to out of the works of as many travellers. I am willing, however, to make some exception in favour of Mrs. Jameson, who, I cannot say fully *describes*, but notices at much length the interior of the new Palace, Glyptotheca, &c., at Munich; and with so much enthusiasm in her commendation of their splendour, that it is astonishing Mr. Gwilt has not taken her to task for it, and read her a lecture upon her bad taste, advising her, as well as the critic in the *Foreign Quarterly Review*, to keep her remarks in future to her own private circle. Even in our own metropolis, how many rich architectural subjects for the pencil are there, from some of which the public are excluded altogether, nor have other means of becoming acquainted with them except by the assistance of the pencil; while others, although accessible to many individuals, are yet quite shut up from the rest of the public, whether residents in the metropolis or not. To the former of these two classes belong the vestibules, staircases, galleries, libraries, saloons, &c., in such mansions as that of the Duke of Sutherland; to the other, the apartments in Goldsmiths' and other city halls, and in the various club-houses, and similar places. There are many highly scenic parts in the interior of the Bank, yet scarcely one has ever been made the subject of an engraving; at least, has ever been satisfactorily represented. The same remark applies more forcibly still to the chapel at Greenwich Hospital; for, notwithstanding that it is a perfect *bijou* in its way, and quite unique for this country, I am unable to learn that it has ever been delineated at all, although we have views of the interiors of ugly churches, hashed up and set before us again and again, in all their insipidity; and we ought, perhaps, to be thankful if there be not detestable ugliness likewise. Nor have we only to complain that, for the most part, the subjects themselves are taken at random, and, even when they happen to be good in themselves, are rarely made so much of as they might be; for, instead of confining the view to the most effective part, and exhibiting that fully made out in all its details, the chief object appears to be to get rid of detail altogether, and show a formal general view of the whole. Take, for instance, the Roman Catholic Chapel, Moorfields: a view straightforward towards the altar, from the further end, is certainly not the way to set off to advantage the altar-recess itself, with the painting beyond it seen through the screen of columns; whereas a near and somewhat oblique view would render the representation far more scenic and more interesting.

V. A very fair experiment might be made of polychromy, by representing on the drop-scene at one of our larger theatres the portico of a Doric or Ionic temple so embellished, and shown as large as the space would admit of. We should then be enabled to judge of the effect of external architecture, enriched with colours, much more satisfactorily than either from piecemeal specimens of it, or in drawings of the usual size. Whatever might be thought of such an application of colours to actual buildings as a piece of scenic decoration (not an occasional one, but in constant use), it would certainly be exceedingly appropriate for a theatre, and would serve to complete the ornamental appearance of the house. It would, besides, be a very effectual method of bringing more into public notice a peculiarity belonging to genuine Grecian architecture, with which persons in general are quite unacquainted. Let the manager of Covent Garden or Drury Lane bethink of this against another season; for, at all events, a scene of this kind would have the recommendation of being something perfectly novel.

VI. Hardly would it be amiss, or particularly superfluous, were the Institute to establish one or two annual prizes, if in themselves little more than honorary ones, for designs and studies; not of the description usually proposed by academies, not for random *ad libitum* palaces, senate-houses, &c., of which class of buildings not one is erected in a century, and never on the scale contemplated in such visionary projects, but for things of a more practicable and familiar kind, such, in fact, as are wanted every day. For want of exercise in such matters, the profession are pretty much in the condition of people without any other circulating medium than 50*l.* notes and upwards; agreeable enough to possess, but not very convenient to go to market with every day. For a hundred persons who can draw off hand magnificent, but not particularly original, porticoes, and other ready cut and dry classicalities, there is hardly one who can display any felicity of invention, or produce a tasteful composition on a moderate scale, that shall be strikingly effective, and beautifully finished throughout; although columns be entirely proscribed, and the other features be not of the most favourable kind. Were premiums offered for original compositions of detail and ornament, they would tend (at least, it may reasonably be presumed they would) to encourage more careful study in regard to such matters; and, if these are either beneath the notice, or above the comprehension, of architects, the profession ought rather to be thankful, than to complain that another class of persons, styling themselves decorators, are kind enough to come forward, and take the trouble off their hands in respect to the embellishment of the interior of their buildings; nor would it be any great harm were they to leave the exterior also to undergo similar treatment. By way of condemning the *façade* of the Berlin Museum, Gwilt says that it is more like the composition of a scene-painter than of an architect. Very probably it is so, because it is highly scenic, a quality which it is altogether impossible to detect in the works of many architects who might be named, and to which a scene-painter of any taste would never have recourse.

VII. I will here fling to the reader an idea, which he may adopt or not, as he chooses; namely, for getting small, but very accommodating, closets out of the antæ of a sideboard recess in a dining-room, the antæ themselves being hollow, and the inner faces towards the recess hinged and made to open like doors, without exhibiting any indication of being such. Of course, such a contrivance would be entirely thrown away where all occasion for having any kind of closet in the dining-room is superseded by the convenience being provided for elsewhere, and if its being immediately at hand would not be considered as an additional advantage.

Art. III. *Notice of an Action brought by a Surveyor to recover his Charge for making certain Calculations.* Communicated by M. J. B. Ash.

(In the Common Pleas, November 30. 1836. Before Lord Chief Justice Tindal. *Moon* v. *The Guardians of the Witney Union.*)

Mr. Sergeant Wilde and Mr. Harrison were counsel for the plaintiff, and Mr. Serg. Talfourd and Mr. Chilton for the defendants.

This was an action brought by the plaintiff, who is a surveyor, to recover 65*l.* for making certain calculations. It appears the Board of Guardians had determined to build a new workhouse; and, as the union was extensive, a considerable establishment was required. The estimated expense was about 6000*l.* Mr. S. Kempthorne, an eminent architect, was employed; and the plan having been decided upon by the guardians, Mr. Kempthorne appointed Mr. Moon, the plaintiff, to make out an account of the quantities for the use of the builders; and Mr. Moon furnished the calculations required. The plans were then considered by the guardians to require some alterations; and, those alterations having been made, it became necessary to alter the account of quantities. The charge made by the plaintiff for the first account was 40*l.*, and for the subsequent account 25*l.*, amounting together to the sum claimed. Mr. Kempthorne had received 86*l.* by way of compromise upon a larger claim; but no contract was entered into, and the business was subsequently taken out of Mr. Kempthorne's hands.

On behalf of the plaintiff, several architects and surveyors were called to prove that a general usage had prevailed in the profession, for ten years, that a surveyor, and not an architect, should make out the account of quantities for the builders; and that the architect was authorised to employ a surveyor without consulting his own employer.

Mr. Sergeant Talfourd contended that the defendants incurred no legal liability, and objected to the evidence of usage.

The Chief Justice thought that the legal liability was a very proper question to be raised: they, probably, did not feel themselves at liberty to pay the sum in question without some discussion upon the subject.

Mr. Sergeant Talford having understood that he had leave to enter a nonsuit upon the legal points, then addressed the jury with respect to the evidence of usage.

The Chief Justice summed up, and left it to the jury to say whether any such general usage was established, giving the architect authority to appoint a surveyor without consulting the principal employer; that the plaintiff might, upon reasonable enquiry, have become acquainted with it.

The jury retired, and returned a verdict for the plaintiff, damages 65*l.*, subject to a motion for a nonsuit.

Hilary Term, 1837.—Mr. Sergeant Talfourd moved for, and obtained, a rule to show cause against the verdict, on the grounds that there was no privity of contract between the plaintiff and defendants, and that the evidence of alleged usage was not sufficient to sustain the action.

Trinity Term, 1837.—The case was argued before the Judges. Decision,—That there was enough to show that the architect had in this case an implied authority, as agent for the defendants, to employ the plaintiff; therefore they confirmed the verdict for the plaintiff.

REVIEWS.

Art. I. *Elements of Architectural Criticism, for the Use of Students, Amateurs, and Reviewers.* By Joseph Gwilt, Author of a Translation of Vitruvius, &c. Royal 8vo, pp. 98. London.

We hardly know how to enter on the review of this work, it being, taking it altogether, in our opinion, discreditable to its author. In what we say of it, however, we shall bear in mind a principle, which we hope we always act on: viz., that every action of man ought to be guided by a benevolent feeling; and that the grand object in writing a review, like that of all other human actions, ought to be to do good; not merely to the proprietors of the review, but to mankind at large. The present state of human nature is indeed such, that a clever review, dictated by malevolent feeling, will generally succeed better in selling the book in which it appears, than one of a contrary description; but, by doing good, we mean pointing out the errors of the work reviewed in such a manner as to lead to the diffusion of more correct principles, and, at the same time, not to give any personal offence to the author of the work, at least if he be a reasonable man. From this fundamental principle of reviewing, we have derived a rule which we think convenient for daily use; and that is, to suppose that we are personally acquainted with the author, and are consequently unwilling to hurt his feelings. In this spirit, then, we make the following remarks.

From the title of this book, we expected that it would be entirely, or at least chiefly, occupied with elementary principles of architectural criticism; instead of which there are only three or four pages that can have the slightest pretension to be entitled elementary principles, and these are contained in Sect. i. On the Laws of Proportion. The rest of the work may be described as remarks on certain articles which have appeared in the *Foreign Quarterly Review.* There remarks are contained under the heads of, Sect. ii. Grecian Architecture; Sect. iii. Italian School of Architecture; and Sect. iv. German Architecture: in which the object seems to be to attack what the writer in the *Foreign Quarterly* has said under each of these heads.

In Sect. i., entitled Laws of Proportion, the author has quoted Lebrun's theory, in which stability is made the fundamental principle of proportion; and in which the rules for the general proportions of the different orders are derived from the adjustment of the support to the load. This we conceive to be the only valuable part of the book, of which it occupies between four and five pages. The subject, the author tells us in the following passage, was first noticed in his edition of Chambers's *Civil Architecture.* We quote this passage entire, because we think it proves two points: in the first place, that the author cannot adopt a simple and clear style of writing, or, if he can, does not think it worth his while; and in the second, that he does not understand the subject of fundamental principles. Who that did, would speak of some qualities affecting the eye, in contradistinction to others which affect the understanding and the affections?

> "But I wander from the subject, and it is now time to turn to one of the more immediate objects of these pages, namely, the introduction to the reader of the theory laid down by Lebrun. This was first noticed in my edition of Chambers's *Civil Architecture*, in 1825, but seems nevertheless to have attracted so little attention in this country, as to be scarcely seen in a catalogue of books, though on the Continent it has met with a very different reception. If it can be shown that those buildings of antiquity which are universally accounted beautiful, exhibit a certain constancy in their proportions of weight and loading, it seems but a fair inference that their beauty must, at least in a great degree, if not altogether, be the result of those proportions. Perhaps, if the subject were pursued *au fond*, it would be found that on these proportions might depend not only the requisites of magnitude and strength, which, in construction, are the qualities which affect the eye—those of order and harmony, which, in design, are qualities affecting the understanding; but even the requisities of richness and simplicity, which are qualities more especially exciting the affections. Moreover, the principles in question will be found to involve the science of construction, which, to the architect, is what execution is to the painter, without which respectively neither can embody his ideas."

The remarks on the article in the *Foreign Quarterly Review* are not such as to afford any profit in the perusal, (though there are not half a dozen pages in the work in which the word *Foreign Quarterly Review* does not occur,) with the exception of one, in which he justly blames the reviewer for having, in the *Foreign Quarterly Review*, No. 37., unfeelingly "raked up all the bad points of the late Sir John Soane's private character for the purpose of holding it up to the contempt of the public." (p. xiv.) The faults of this work appear more conspicuous, when contrasted with the handsome manner in which it is got up; we allude to the large page, superior paper and type, and handsome binding.

ART. II. *A Treatise on the Strength of Timber, Cast Iron, Malleable Iron, and other Materials; with Rules for Application in Architecture, Construction of Suspension Bridges, Railways, &c.: with an Appendix on the Power of Locomotive Engines, and the*

Effect of Inclined Planes and Gradients. By Peter Barlow, Esq., F.R.S. 8vo, pp. 492. 7 plates. London.

This is a new edition of a well-known and valuable treatise, with so many additions and improvements, that it might almost be considered as a new work. The first edition was published in the form of an Essay, in 1817, since which there have been three editions sold; and of the present, the fourth, the author says, "I have thought it right to remodel the whole, and to introduce into it a great variety of matter not found in the original work.

"The arrangement which it has now been thought proper to adopt may be thus stated: the first subject treated of is, the strength of direct cohesion of the fibres of timber, with an account of the experiments of Musschenbroeck, Du Hamel, Emerson, and others; and, lastly, of those made by the author, with a description of the apparatus by which the results were obtained.

"The next division treats of the mechanism of the transverse strain to which timber and other materials are exposed when loaded in any part of their length, and the mechanical action of the fibres to resist this strain. We then investigate theoretically the laws of deflections under all the varieties of position and fixing to which timber and iron are subjected in architectural and other constructions. Having thus examined theoretically the nature of the several strains, and the consequent deflections, we proceed to a detail of various experiments by Buffon, Girard, Beaufoy, &c., on the transverse strength of timber; and, lastly, the original experiments of the author, which laid the foundation of the first edition, and on which is founded the Table of Data adopted in the subsequent part of this division of the work. Another section is employed in the detail of experiments on bent timber, as used in ship-building—on the effect of boiling and steaming timber; experiments by Girard on vertical pressure, and a series of illustrative problems and examples. A short chapter follows on the strength of cement and building materials, as stone, brick, &c., and on the subject of revetment walls.

"The next division treats on the direct strength of cast iron, and its application in the construction of hydrostatic presses; also on the direct strength of copper, brass, yellow metal, &c., from experiments made by Mr. Kingston on the testing machine in His Majesty's dockyard at Woolwich; and others by Messrs. George Rennie, Tredgold, and Duleau.

"The following chapter treats on the transverse strength and deflection of cast-iron beams under a great diversity of forms, principally from a highly interesting and valuable paper by Eaton Hodgkinson, Esq., in volume five of the Manchester Memoirs. We come now to the subject of malleable iron; and as the experiments on this material were principally made on the testing machine in His Majesty's dockyard, Woolwich, it was thought that an accurate drawing and description of this machine would be acceptable to the reader; two new plates have been therefore introduced, illustrating its entire construction and operation.

"A detail of experiments is then given on the strength of direct cohesion of iron bars and bolts, the testing strengths of the different descriptions of iron cables used in the British navy; Mr. Telford's experiments on iron wires; and, lastly, a Table by Davis Gilbert, Esq., for the calculation of the several particulars connected with the construction of suspension bridges.

"The next subject of investigation is the application of malleable iron to the purposes of railway bars, being the substance of two Reports by the author, addressed to the Directors of the London and Birmingham Railway Company, with the addition of several subsequent experiments on railway bars of various forms and dimensions, and of miscellaneous experiments on the effect of locomotive engines and trains on the bars of the Liverpool and Manchester line.

"These form the subject of the principal matters treated of in the body of the Work; but an Appendix is added, on the practical action of locomotive engines, and on the effect of inclined planes and gradients, with a view to the comparison of the mechanical advantages and disadvantages of rival lines of railway."

ART. III. *On the comparative Merits of the various Systems of warming Buildings by Means of Hot Water.* By W. Walker, Pamph. 8vo, pp. 16. Dublin.

MR. WALKER appears to have examined the different modes of heating with care, but, possibly, with a lurking prejudice in his mind in favour of gun-barrel tubes; otherwise we cannot conceive why he should determine in favour of the mode in which these pipes are used.

The first section treats on large metal tubes, which in a dwelling-house are bulky and clumsy; the second on flat tubes, which are better, but which, after long use, are apt to open at the top or bottom, at the welded seam; and the third is on small gun-barrel tubes, which, as we have before said, Mr. Walker prefers. We acknowledge that this is the very last mode that we should adopt; but, notwithstanding this, and though we have seen the apparatus burned in one case, from the non-circulation of the water; torn to pieces in another, from some unknown cause; and burst, in a third case, from the frost; yet still we may be wrong in the conclusions at which we have arrived. The per-centage of the accidents which have occurred in the use of all the different modes of heating should be ascertained, before the relative danger of any of them can be determined on. What if it should turn out that Perkins's is the safest mode after all? It may be so; for, from the per-centage of accidents which happen by railways, we understand they are incomparably safer to travel by, than common roads; and yet, to look at the rapidity with which the carriages move along, one could not come to this conclusion all at once. At all events, as our great wish is, if possible, to act without prejudice, and in every case with a sacred regard to justice, we give the following long quotation, which concludes Mr. Walker's pamphlet. After describing the mode in which the gun-barrel tubes are formed, and especially the joints, he says, —

"The superiority of this method of making joints over any that could be applied to the large round or flat pipes, is the highest recommendation that Perkins's method could possibly possess over the others; since in that method alone can perfect security be found. When we consider the annoyance of an escape of water, the damage a handsome building may sustain by it, and the expense incurred in repairing such defects, its preeminent advantages must be strikingly obvious. And, if we suppose the possibility of an escape from the small tubes, it is trifling, compared with that from the other kinds, the least capacious of which requires eight times the quantity of water, nearly the whole of which may leak out. Now, ten gallons will suffice in the small tubes for heating a tolerably large building; the escape of which would be quite immaterial compared with that of eighty gallons, which the larger pipes would require. But even the remotest probability of a leakage is so contrary to experience, as not to come within the question.

"The advantage of diminished weight possessed by flat tubes over round ones belongs, in a still greater degree, to the gun-barrel tubes. To do the work of one foot in length of flat pipe, three feet of small tube will be necessary at its increased temperature: both these quantities being filled with water, the latter will weigh about one third as much as the former. So insignificant, indeed, is the weight of Perkins's apparatus, that, practically, it never comes under consideration.

"The quantity of water contained by 3 ft. of this tube is about 16 cubic inches. The quantity previously stated as the contents of a foot of flat pipe is 96 cubic inches; whence a saving of five sixths in quantity of water. Hence this apparatus is much more at command, and more easily controlled and regulated, than the others; the small quantity of water being so easily and rapidly heated and cooled. As in the case of the flat pipes, this property has given rise to objection where horticultural buildings, and others requiring a high temperature to be prolonged without attendance, are concerned, it being always urged, that a large body of water is requisite to maintain the heat. But it is found, and has been demonstrated in numerous instances, and in very extensive ranges of glass-houses, that, notwithstanding the natural tendency of a small quantity of water at a high temperature to part rapidly with its caloric; still, by a proper arrangement of the furnace, or fireplace, a sufficiency of heating surface, and a tubular boiler of adequate dimensions, the temperature of 70° can be maintained for seven hours, during frost, with a loss of only 6°, which is amply sufficient for practical purposes.

"These tubes, when neatly and regularly fixed, are by no means a disfigurement in themseves, therefore do not frequently require concealment, and are so small, that, when painted of the same colour as the skirting or other material to which they are fixed, they pass almost unobserved. In highly ornamented buildings, where their concealment is indispensable, the extremely small space they occupy renders it so easy to disguise them behind skirtings or fixtures, as to make them capable of introduction in a vast number of buildings, and applicable to a variety of purposes, to which neither of the other plans could be possibly adapted. Numerous examples might be mentioned in this city alone, where those plans, by reason of their bulk, would have been utterly inadmissible; and to which the advantages of the hot-water principle would have been altogether lost, but for the extreme facility of introduction peculiar to this application of it. An immense field is thus opened for the advantageous adoption of that principle, and the complaints of disfigurement which the utmost ingenuity of many skilful architects and engineers could not prevent, are entirely obviated. I need not say more on this point than just mention, that 200 ft. of this tube, a quantity sufficient to heat an apartment 40 ft. long, 25 ft. wide, and 14 ft. high, can be concealed beneath a pedestal 3 ft. long, 1 ft. 6 in. wide, and 4 ft. high; while the equivalent quantity of flat pipe, viz.:—67 ft. would require a pedestal of the same height and width, and *twice* the length.

"Let us now proceed to notice the objections usually raised against Perkins's apparatus; for, to objection all inventions are open, at the dictation of interest, of prejudice, and, also, of the fair spirit of inquiry. The first is, that the pipes will be burst by internal pressure, the water not having full liberty to expand in them. Were the system liable to this objection, it certainly would render nugatory the benefit of security from leakage. In the few isolated cases of rupture that occurred at the first introduction of the invention, it has been clearly ascertained, either that the work had been improperly tampered with, or that the first principles of hydraulics had been neglected in its erection, through the inexperience of the parties employed. On the improved plans of arrangement, suggested by those accidents, and by further experience, such casualties now never occur. One cause of bursting was the deficiency of strength in the material, which was made of the same thickness as the common gas tube. They are now made double that thickness, or three sixteenths of an inch, the great strength of which, when the smallness of the bore (barely three fourths of an inch) is considered, must be apparent. They are proved by the manufacturer to a pressure of 2000 lb. per square inch, by means of a hydraulic force-pump.

"The idea of bursting being inseparably connected with that of danger (probably from the deplorable catastrophes that have resulted from the bursting of steam-boilers), I may here state, that, having been an eyewitness on two occasions to accidents of this nature, I should not have the least objection to stand within a foot of the rupture at the moment of its giving way. The report was small, and the escape of steam over in a few moments; after which, the only visible effect was the water trickling out from a fissure in the pipe, about 3 in. long and one eighth wide. The real mischief done was nothing compared with that of an ordinary leak on the other plans. The great strength of the material, the improvements in laying the pipes, and above all, the fact of these trifling accidents having been confined to the early stage of their introduction, place it, however, beyond the verge of human probability, that my courage will be put through the watery ordeal above stated. If the pipes be properly arranged, it is impossible.

"Casualties of this nature, proceeding from an improper arrangement of the tubes, are not confined to this plan. The other methods are equally liable to them, if first principles be not constantly kept in view. Two of these have come under my own observation, of one of which, a circumstantial account was published, about two years ago, in the *Mechanic's Magazine*, by Mr. W. Carpmael, of Lincoln's Inn, London, in whose house the accident occurred. This should be borne in mind in a comparative view such as the present.

"The next objection usually brought forward is, that the pipes will become furred up with the sediment of the water. When we consider the small quantity of water requisite for keeping up the supply to a large apparatus of this kind (about a quart in a week), it will be evident, that the weekly amount of sediment introduced will be very small. And, since the above supply is more than requisite for an apparatus containing ten gallons (which would not be used during the summer months), it follows that the original ten gallons would not be entirely consumed for at least a year. Now, a common tea-kettle, emptied and replenished, say once in a day, each charge of water leaving its own sediment behind, would not be furred up for at least twelve months, or 365 days. Consequently, the pipes being replenished only once a year, they would remain 365 years in good condition. But it appears probable that the sediment is not deposited at all; since the water flows through the gun-barrel tubes at the rate of 25 ft. per minute, which causes sufficient friction to keep the inner surface as it were washed, so that the sediment remains held in solution, or combination. This opinion is confirmed by the following experiment:—A socket was left loose, so as to allow of a small escape of water, which, on gaining access to the air at a high temperature, passed off in steam, leaving, in course of time, a white crust on the surface of the pipes; which would have remained on the inner surface, had it been previously separated from the water.

"Another argument urged against these tubes is, that they must soon be worn out by internal oxidation. The quantity of oxygen weekly taken in with so small a supply of water cannot be great; and, although water passed over a heated iron surface has a strong tendency to part with its oxygen, even this small quantity is found not to combine with the iron, under the pressure at which these pipes are worked. This and the last objection are best refuted by the following fact:—An apparatus for heating a large ginger-stove, in

London, was examined after being two years violently worked night and day; and, though the water used was that of the river Thames (not remarkable for its purity), the interior surface of the tube was found perfectly free from corrosion or sediment of any kind; so much so, that the original marks of the rollers used in the manufacture were distinctly visible.

"The last objection worthy of notice is, that the tubular boiler will soon be burnt through. How this form of boiler should be more likely to become so than any other, it is difficult to conceive. The pipes are as thick as large steam-boilers are usually made. The surface, it is true, is larger in proportion to its contents than in the usual forms; but it must be borne in mind, that the faster the heat is imbibed from the fire, the more rapidly does the water circulate; consequently, the faster is the cooled water poured back into the boiler. Numbers of these boilers have been in constant work for five years, without exhibiting the least appearance of detriment from this cause.

"The only question now remaining is, the comparative amount of fuel consumed respectively by the three kinds of apparatus. From what has been stated, it appears that, in all the other points in which the flat pipes are preferable to the round ones, the gun-barrel tubes possess a decided preeminence over either. When we consider that this method has, from its nature, the greatest of all advantages, that of perfect security from leakage, which in no degree belongs to either of the others on a large scale; that its weight is quite immaterial; that its small size renders it incapable of attracting observation, and perfectly easy of concealment; that it is more easily controlled and regulated, and more rapid in its effects; that its first cost is fully fifteen per cent. less, and that it saves more than this in carpenters' bills, and dilapidations; the question of fuel becomes quite a subordinate one. It is one on which great difference of opinion exists among those well acquainted with the subject, which arises, in great measure, from the difficulty of putting the different plans into fair competition. A calculation merely of the space heated will lead to a very uncertain result. (See *Tredgold on Warming and Ventilating.*) Different buildings, of the same size, are subject to very great differences of facility in heating: owing to their shape, their situation with regard to adjacent buildings, number and position of windows and doors, ventilation, drafts of air, number of occupants, and many other local causes. Again, the quantity of fuel consumed depends very much on the nature of the chimney which carries away the smoke; for I have sometimes found that a small apparatus has consumed more than a larger one, which can only be referable to this cause.

"The precise comparative consumption of fuel, therefore, can only be obtained when one of these methods shall be done away with in any given building, and another substituted at the same chimney. This has been done, with a result favourable to the gun-barrel tubes; though on so limited a scale as, perhaps, not to form a sufficient ground from which to draw general conclusions. But it appears to me to be quite a secondary consideration, which will not admit of being brought into competition with so numerous a catalogue of advantages as have been given, even though it should be adverse to the small tubes.

"That these tubes save considerably over the old method of stoves, has been satisfactorily tested, in many instances, by actual substitution; of which I shall merely furnish one, from an original document in my possession, giving the results of experiments tried on one of Perkins's apparatus in a large public institution at Londonderry, by the officers of the establishment; which shows that, though double the amount of space is now heated, the saving of fuel on a yearly consumption of 95*l.* is 35*l.* 9*s.* Future improvements may make this saving still greater."

Mr. Walker has not touched on the subject of ventilation in connexion with heating; a subject which, as Mr. Ritchie has shown in Art. I. in the present Number, is almost totally overlooked by the heating engineers of the present day.

Art. IV. *Third Letter from W. R. Hamilton, Esq., to the Earl of Elgin, on the Propriety of adopting the Greek Style of Architecture in Preference to the Gothic, in the Construction of the new Houses of Parliament.* Pamph. 8vo, pp. 58.

Mr. Hamilton has great merit in persevering in his recommendation of the Grecian style, which, we sincerely hope may ultimately be that adopted in the Houses of Parliament. We cannot bring ourselves to admire an irregular building, or one which has chiefly the picturesque or novelty to recommend it, for a public edifice. Let us have the simple and grand quadrangular masses of the Roman manner, which owe nothing to novelty, and, consequently, the approbation of which will have no relation to fashion. The duration of such a building, too, will be incomparably longer than that of any modification of the light and elegant Gothic, exposing, as it does, so much greater a surface to the action of the weather. We sincerely hope that Parliament will pause before they either rebuild the houses on the same site, or rebuild them in the Gothic manner.

Art. V. *Domestic Clubs for the Working Classes.* By A. Freeman of Exeter. Folio Sheet. Price 1*d*. Limbird.

This sheet contains a proposal altogether after our own heart; and, if we had time and money at our command, we should devote both to aid in carrying it into execution. The principle which the author proposes to apply to the working classes might probably be applied with peculiar advantages to particular professions: for example, the architects of a great city like London might live together in one or two large club establishments; and we are certain that authors would benefit immensely by them. We formed a scheme of this kind nearly twenty years ago, of which some notice will be found in the *Mechanic's Magazine*, and also in our *Encyclopædia of Cottage Architecture*, p. 244. and 250., where the plan and elevation are given of an establishment of the same nature as that proposed in the sheet before us. We hope the paper will be duly brought into notice in the *Mechanic's Magazine*, and in all weekly newspapers. Some man of capital will doubtless soon be found who will carry such an establishment into execution merely as a commercial speculation.

Art. VI. *The Antiquities of Athens, and other Monuments of Greece, as measured and delineated by James Stuart, F.R.S., F.S.A., and Nicholas Revell, Painters and Architects.* Small 4to, 103 pages, 70 plates.

A very neatly got up work, but on which no price is marked. It contains the essence of the costly work of Stuart in a portable form, and will be a valuable companion to every young architect, who wishes to familiarise himself with Grecian proportions.

Art. VII. *The Churches of London: a History and Description of the Ecclesiastical Edifices of the Metropolis.* By G. Godwin, Jun., Associate of the Institute of British Architects; assisted by J. Britton, F.S.A., &c. Nos. 5. and 6. 8vo. 1*s*. each.

No. 5. contains two Views of St. Peter's in the Tower; and No 6. two Views of the Temple Church; all, as usual, exquisitely engraved, and neatly described. This work is so very cheap, that we are sure it must find its way into the library of most antiquaries, of many architects, and of all admirers of churches.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Professional Precedents.* No. II. *Contract for building New Churches.*

This Indenture *made the Day of*
in the Year of our Lord One thousand eight hundred and
between
of in the County
of of the
one Part, and
of in
the County of of the
other Part.

Whereas His Majesty's Commissioners for building new Churches appointed under an Act of Parliament passed in the fifty-eighth year of the reign of His late Majesty King George the Third, have determined to erect a upon a certain piece or parcel of land situate at

And whereas the said has been appointed by the said commissioners the architect for the superintending the building the said , and contracting on the behalf of the said commissioners, as their agent or trustee, with any masons, bricklayers, carpenters, smiths, plasterers, and other persons, for the execution of the different branches of the work necessary for erecting and completing the said

And whereas the said hath prepared the necessary drawings for the same, and made a general specification of all the works to be done, and of the materials to be found and provided for that purpose, which specifications and drawings have been approved of by the said commissioners, and which specification refers to the said drawings:

And whereas the said
is willing to contract with the said
to execute all and every such parts of the said works as are particularised in the said general specification, or which appear from the aforesaid drawings, or which may be implied therefrom, or incidental thereto, under the head

at or for the price or sum of

to be paid as hereinafter is mentioned:

And whereas such parts of the said general specification as are comprised therein, under the head

are hereunto annexed, or hereunder written by way of schedule:

And whereas the said general specification, and the aforesaid drawings, and which are numbered one to including the said specification from one to inclusive, have been signed by the said
and the other persons who have contracted to execute the remainder of the works specified in the said schedule, and the said general specification and drawings are intended to be deposited with the clerk of the works employed on the aforesaid building, for the use of all the parties contracting, who are to have reasonable access thereto:

And whereas by the regulations adopted by the said commissioners, the persons contracting with the architect appointed by the said commissioners to build any church or chapel, are respectively to receive from time to time, during the progress of the works by them respectively contracted to be executed, instalments upon account of the work then actually done and executed by them (such execution to be certified by the architect as hereinafter mentioned); and upon the completion of the works so contracted by them respectively to be executed as aforesaid (such completion also to be certified as hereinafter mentioned), are to receive the remainder of the monies due to them respectively upon their respective contracts:

And whereas it hath been agreed that the said
should secure the due performance of said contract, according to the conditions herein contained, by bond or obligation, in the penal sum of
and further, that the due performance thereof should also be secured by the respective bonds or obligation of two sureties each, in the sum of

Now therefore this indenture witnesseth, that in consideration of the sum of
hereinafter agreed to be paid in manner hereinafter mentioned, the said

doth hereby for heirs, executors, and administrators, covenant, promise, and agree, to and with the said
in manner following; (that is to say,) that the said
shall and will duly execute, perform, do, provide, and complete, all and singular the works and materials respectively described, specified, required, and set forth in the specification comprised in the schedule hereunto annexed, or hereunder written, and therein, or in the said drawings contained or referred to, or thereby implied, according to such specification, and the aforesaid drawings and general specification; and also according to the general instructions and such explanatory drawings as shall or may from time to time be provided by the said
during the progress of the works hereby agreed to be done, and shall and will do, perform, and execute, and complete all the said works, with materials

of the best quality, and in the most workmanlike manner, to the satisfaction of the said architect, and in all respects comply with, and abide by, the true intent and meaning of the said specification, drawings, plans, and instructions, and of these presents: and further that in case the said
shall at any time or times be of opinion that a sufficient number of workmen are not employed by the said
in the execution and completion of the works hereby agreed to be done, then, and in every such case, it shall be lawful for the said
by a written notice or notices under his hand, to be left with the said

or sureties, or at his or their usual place of abode*, to require that the said
shall provide such an additional number of workmen as the said
may think necessary and reasonable to be kept employed on the said works either permanently or for a limited period, as the said
shall, by such, or any other written notice or notices, require; and in case the said
shall not, within seven days after any such notice or notices shall be so left as aforesaid, provide the additional workmen thereby required, and in all respects comply with the said notice, or shall at any time thereafter, in any respect, fail to comply with the said notice, then, and in every such case, it shall be lawful for the said
to provide such additional workmen, and to continue to employ them for such length of time, and generally in such manner, as shall have been required by him in and by such notice or notices as aforesaid, at such weekly or other payments or wages as the said
may think proper, which payment shall be paid and deducted out of the monies which may then remain due to the said
by virtue of these presents; and that in case the said balance then due shall be insufficient to cover the said payments or wages, then the said
heirs, executors, or administrators, shall and will make good and pay the deficiency upon demand: and further that the said
shall, during the progress of the works hereby contracted for, provide and keep one or more competent foreman or foremen to superintend the said works, and to remain constantly, during the hours of work, upon the site of the said intended building; and that if the said
shall at any time consider any one of the said foremen as in anywise incompetent, or as acting improperly, it shall, in every such case, be lawful for the said
to supersede him, and put another in his place, at such weekly payment as the said
may think proper, which payment shall be paid and deducted out of the monies which may be due to the said
by virtue of these presents: and further that the said
shall not (unless with the consent of the said
in writing) make any sub-contract or sub-contracts for the execution of the work hereby contracted for, or any part thereof, nor (unless with such consent) assign or underlet this contract: and further, that in case the said
shall become insolvent or be declared bankrupt, or shall, from any cause whatever, be prevented from or delayed in proceeding with or completing the said works, according to this present contract, or shall not proceed in the said works to the satisfaction of the said
or of the said commissioners, it shall be lawful to and for the said
or the said commissioners, to give, or cause to be given, or left with or at the usual place of abode of the said

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* Or with the foreman or principal workmen engaged on the works.

or sureties, a notice or notices in writing, for the said

to enter upon and to commence, and regularly proceed with the said works; and that in case the said
shall, for seven days after such notice given or left, make default in commencing or regularly proceeding with the said works, it shall and may be lawful to and for the said
or the said commissioners, to employ any other respectable workman or workmen, either by contract, or measure and value, or otherwise, to proceed with the said works, and to complete the same, and pay or cause to be paid to the said workman or workmen the amount of his or their charges for the same, and for all necessary materials to be found and provided for such completion, out of the money which shall be remaining due to the said
on account of this contract: and further, that the monies which previously to such default shall have been paid to the said
on account, in respect of any work or materials then already done, executed, or provided, by the said
shall be considered as the full value, and be taken by the said
in full payment and satisfaction, not only of and for the said work and materials, in respect of which such payment may have been made, but likewise of and for any other work and materials which the said
shall then have done, executed or provided, although no such payment may have been previously made in respect thereof: and further, that all the balance and monies whatsoever, which then or thereafter would have been or become due or payable to the said
under this present contract, if this present clause had not been inserted, together with all the materials then delivered for the purposes of the work hereby contracted for, and then being upon or about the site of the said building, shall, upon such default as aforesaid, become and be in all respects considered as the absolute property of the said commissioners: and further, that if the said balance, monies, and materials, so to become the property of the said commissioners as last aforesaid, shall be insufficient to cover such charges for workmen and materials, as are herein-before lastly directed to be paid thereout, then the said
heirs, executors, or administrators, shall and will make good and pay such deficiency upon demand: and further, that all materials brought and left upon the said land by the said
or by order, for the purpose of being used in or about carrying on the said works, shall, from the time of their being so brought, be considered as the property of and belonging to the said commissioners, and shall not, on any account or pretence whatsoever, be taken away by the said
executors or administrators, or any other person or persons whatsoever, without the special licence and consent of the said
or of the said commissioners but neither the said commissioners nor the said
shall be in anywise answerable or liable for any loss or damage which may happen to or in respect of the said materials, either by the said materials being lost, stolen, or injured by weather, or otherwise howsoever: and further, that in case any of the said materials so brought by the said
shall be considered by the said
or the clerk of the works, as unsound or improper, the said
shall and will, upon notice in writing to or foreman or foremen, given by the said
or clerk of the works, immediately cause the same to be removed from off the ground, and proceed with the said works with materials corresponding with the specifications and instructions herein-before mentioned, and to the satisfaction of the said

and that in default of such removal within three days [*] after the said notice in writing [†], it shall and may be lawful to and for the said
to cause the same to be removed to such place or places as he or they may think proper, without being in anywise answerable or accountable for any loss or damage that shall or may happen to such materials so removed, and to cause proper materials to be substituted for the same, and to pay all expenses attending such removal and substitution, out of the monies which may be due to the said
by virtue of these presents: and further, that in case the said
should consider any part of the said works to be unsoundly or improperly executed, the said
shall cause the same to be immediately taken down and properly re-executed without any extra charge whatsoever: and further it is agreed by and between the said parties to these presents, that if the said commissioners shall think proper at any time to make any alterations, additions, or omissions, to or in the works hereby contracted for, they shall give to the said
written instructions for such alterations, additions, or omissions, signed by the secretary of the said commissioners, but the said
shall not be considered as having authority for any alteration, addition, or omission, nor as entitled to make any claim for the value or otherwise in respect thereof, without such written instructions so signed as aforesaid: and further, that any such alteration, addition, or omission shall not vacate this present contract, but shall be ascertained by admeasurement or valuation in all respects according to the prices stated in the tender, which the said

has made in respect of the works hereby contracted for, and which tender is also set forth in the said schedule hereunto annexed or hereunder written; and that the value thereof, so ascertained, shall be added to or deducted from the amount of this contract, as may be, and the addition in value (if any) paid for in the same manner, and at the same time, as is hereafter mentioned for the payment of the said sum of
hereby agreed to be the price of the works hereby contracted to be executed: and it is hereby further agreed, between and by the said parties to these presents, that the clerk of the works shall not set out any of the works, but shall furnish copies of the original drawings in his possession, for the use of the said
and the said
shall see that the said copies are correct, and any deviations made therein from the original drawing, except what are ordered by the said commissioners in writing as aforesaid, shall be altered and corrected at the expense of the said
And it is hereby further agreed, by and between the said parties to these presents, that any damage to the works, or to the materials or implements therein used, arising from accident, or from the carelessness of workmen or otherwise, shall be effectually made good by the contractor or contractors for the particular branch of the work in which the said damage shall happen, unless it be proved to be done by any particular workman or workmen in any other branch, in which case the contractor or contractors employing the said workman or workmen shall be accountable for the damage, of which the amount shall be determined by the said
but no charge whatever shall be brought upon the said
or upon the said commissioners, for making good the same: and further, that the said

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[*] This is too long an interval, and allows an unprincipled contractor the opportunity of working up some of the bad materials, in spite of the vigilance of the most active clerk of the works: twenty-four hours should be the time allowed.

[†] Here the words "the same shall be considered as rubbish" should be introduced, in order to relieve the architect from all responsibility.

shall and will generally do, execute, and provide not only all the work and materials respectively expressed, described, and specified in the said specification hereunto annexed or hereunder written, but likewise all such works and materials as are necessarily implied, or may be reasonably inferred, in or from the said scheduled specification, or in and from the said general specification and drawings respectively, although the same may not happen to be therein expressly mentioned, as to be done by the said
the true intent and meaning of these presents, and of the said
and
being: and it is hereby declared to be, that the work and materials hereby contracted to be done, executed, and provided shall include all that is requisite for the completion of the said so far as respects the said
work: and further, that if any dispute shall arise between the said
and any of the other contractors for the other parts of the said works relative thereto, or to any other matter connected with the performance of the said works, every such dispute shall be referred to the said
whose decision shall be final: AND THIS INDENTURE FURTHER WITNESSETH, that in consideration of the premises, and of the covenants herein-before contained on the part of the said
to be performed, the said
doth hereby (as such agent or trustee on behalf of the said commissioners as aforesaid) agree with the said
that he the said
shall be paid by the said commissioners the aforesaid sum of
of lawful money of Great Britain, so agreed to be the price for the providing and execution of the said materials and works hereby contracted for, by the instalments, at the times, and in the manner following; (that is to say,)

When the said
shall have executed any considerable part of the work, hereby contracted to be done as aforesaid, and the said
shall have inspected the same, and ascertained that it is executed in strict conformity with these presents, and the drawings, specifications, and conditions herein referred to, then the amount or value of two thirds of the work so executed shall be paid, as hereinafter mentioned, to the said
and so from time to time in like manner until the whole of the said works shall be executed: and the balance of the said sum of
shall be paid within two months after the whole of the works of the said ch shall be so completed, and shall have been inspected and certified to Her Majesty's said commissioners by the said

Provided, nevertheless, that the said
shall not be entitled to demand or receive any of the aforesaid instalments until the said works, on which the payments of the said instalments are respectively made to depend, shall have been completed to the satisfaction of the said
who, on notice being given to him by the said
for that purpose, shall examine the said works so from time to time to be executed by the said
and then (if the same shall be so completed) certify the same to the said commissioners, according to the form agreed on by the said commissioners; and thereupon the said
executors, administrators, or assigns, shall be entitled to receive from the said commissioners the amount of the instalment then due in respect of the work so certified to be done, such payments to be made in the Exchequer bills, placed at the disposal of the said commissioners by the act 58 Geo. III. c. 45., or in cash, at the option of the said commissioners; and it is hereby further agreed, that the decision of the said
with respect to the amount, state, and condition of the work actually executed, and also in respect to any and every question that may arise concerning the construction of this present contract, or the aforesaid drawings and specifications, or the execution of the works hereby contracted for, or any

matter or thing whatsoever relating to the same, shall be final and without appeal

Provided always, and it is hereby declared and agreed by and between the said parties to these presents, that if the said
or other the architect to be nominated as hereafter mentioned, shall happen to die, or shall be removed for any cause, at the discretion of the said commissioners, or shall decline or refuse to act, or become incapable of acting as such architect as aforesaid, before the said works shall be fully executed and completed, it shall and may be lawful for Her Majesty's said Commissioners for building new Churches to nominate another person as architect in the room of the said or of
such other architect so dying, being removed, or declining, refusing, or becoming incapable to act as aforesaid; and that such architect so to be nominated shall have the same powers and authorities, and be liable to the same agreements and obligations to all intents and purposes whatsoever, as are by these presents given or reserved to or entered into by, or are hereby intended or implied to be given to, or to be entered into by, the said
as such architect as aforesaid: and this contract on the part of the said

shall be completed by the said
under the direction and control of such newly appointed architect, in such and the same manner in all respects as if this contract had been made and entered into with the said newly appointed architect:

And the said
do hereby covenant and agree, that the whole of the said works shall be completed on or before the day of
in the year one thousand eight hundred and

And, lastly, the said
doth hereby covenant and agree with the said
that the said
shall and will, at all times from the date hereof, up to the completion of the works hereby agreed to be done, render unto the aforesaid Commissioners for building new Churches, or their secretary, a true and just account of all and whatsoever the timber and other materials whatsoever, on which any excise or custom duty shall have been paid, or is payable, and which shall be used in and about the works hereby agreed to be executed, together with the names of the vessels in which such articles shall have been imported, or from which they may have been landed, together with the excise duties or customs paid in respect of such materials; and shall and will certify and authenticate such accounts, in such manner as the said
or the said commissioners may require; and shall and will, during such time as aforesaid, do all such acts, matters, and things as may be required by the said
or the said commissioners, for the purpose of exhibiting to Her Majesty's Commissioners of the Treasury a true and just account of all articles used in and about the aforesaid buildings, on which any duties of excise or customs shall have been paid, to the end that the aforesaid commissioners of Her Majesty's Treasury may be enabled to ascertain the amount of the duties on such articles, to be remitted or repaid to the aforesaid Commissioners for building new Churches: and it is hereby declared, that until such account shall have been so rendered as aforesaid, and all matters and things in and about the premises which shall have been required by the said
or the said Commissioners for building new Churches, shall have been done and performed by the said
the said
shall not be entitled to receive the last instalment of the said sum of

herein-before agreed to be paid, after the completion of the said contract as aforesaid; any thing herein-before contained to the contrary thereof in anywise notwithstanding:

Provided, lastly, that this present contract shall not, nor shall any clause or thing herein contained, charge, affect, or subject, or be in anywise construed to charge, affect, or subject the said
heirs, executors, or administrators, with any action, suit, or process, whereby the person or persons, or real or personal estates, of the said
heirs, executors, or administrators, shall or may be in any manner made liable for the non-performance or breach of any of the covenants and agreements herein-before contained. In witness whereof, have hereunto set hand and seal the day and year above written.

Signed, sealed, and delivered
by the said

in the presence of

The commissioners will not allow any sum on account of extra works, unless such works have been sanctioned by them previous to execution.

[The above contract, when folded up, to be indorsed as follows.]

NEW CH
AT
CONTRACT BETWEEN
FOR THE
WORKS IN THE NEW CH
AND
ARCHITECT,
AMOUNT £
Dated

ART. II. *General Notices.*

INDIA Rubber Paint. — A composition of India rubber and linseed oil has recently been used for coating over iron, instead of tar, gas-liquor, or common paint. From the elasticity of the India rubber, it is not liable to crack or scale off, and it promises to be of very great durability. A manufacturer in Edinburgh, who is covering the roof of his manufactory with sheet-iron plates dipped in this composition, has promised to send us details, which we hope to be able to give in next Number. The same manufacturer had previously used pitched paper as a roofing; but, though this forms a very durable covering, and one that requires no repairs, the insurance against fire, he informs us, is in his case so much increased by its use, that it comes to be as expensive as a roof of tile or slate. — *Cond.*

ART. III. *Domestic Notices.*

ENGLAND.

THE Institute of British Architects have had a valuable addition made to their library by their Honorary and Corresponding Member, M. Beuth, Privy Counsellor to the King of Prussia. It consists of a volume, in three parts, which has been published under the superintendence of that gentleman, in continuation of the celebrated work entitled *Vorbilder für Fabrikanten und Handwerker*. This selection consists necessarily of a more mixed character than the former parts. There are twenty-four plates in outline, and six shaded, of specimens for armour, furniture, picture frames, goblets, vases, ceilings, and panels, principally in the style of the "revival" of the fifteenth and sixteenth centuries; and four sheets of doorways from ancient buildings, taken from Donaldson's work. One part consists of twenty-three plates of elegantly coloured designs for ceilings and paperhangings, of various degrees of embellished patterns; some of the sheets representing the very elementary parts of foliage of which the more complicated designs are composed. This volume maintains the high character of its predecessors, and proves the jealous anxiety with which the Prussian government seeks to instruct the artisans of the country in the elements of beauty of colouring and purity of design. We perceive that Schinkel, the government architect, has contributed much to the various objects delineated in this volume. The text consists of a very limited quantity of letterpress, printed in another volume of a smaller size. This is a most mistaken practice with the Germans; which, whether proceeding from a notion of convenience or economy, produces quite a contrary effect to either: for, when placed in a library, the plates and letterpress must be in distinct book-cases; and if one be lost or mislaid, it diminishes materially the value or use of the other. This work is the more interesting at the present period, in connexion with the School of Design established by our own government, which, we trust, will be conducted with all the liberality and efficiency which mark the Prussian schools: we hope that no paltry notion of mistaken economy will mar the effort now making to raise the intelligence and skill of our working classes; and we augur well from the appointment of Mr. Papworth as director, than whom there cannot be a more efficient master in every department of decorative design. — *M. J. B. A. London, June* 1837.

Institution of Civil Engineers. — The members of the above Institution held their anniversary meeting on Saturday last, at the London Coffee House, when the Telford medals were distributed to Mr. P. W. Barlow, for his paper and investigations on the best figure and construction of lock-gates; to Mr. Tempenny, for his description of Hull docks; to Mr. Borthwick, for his article on iron wharfs; and to Signor Albano (an Italian), for his description and drawings of a bridge lately erected in Italy. All the above papers are published in the Society's *Transactions*. The medals have on one side a fine bust of Telford, and on the reverse a well-executed view of the Menai Bridge. — *W. London, June* 6. 1837.

Central School of Science, for the instruction of young artisans after the hours of labour, at Sir Isaac Newton's house, St. Martin's Street, Leicester Square, under the superintendence of literary and scientific gentlemen. The object of this Institution is to provide for that portion of the population resident in the contiguous district the means of scientific instruction in those branches of knowledge which are directly connected with, and applicable to, their respective daily occupations; so that, whilst their ordinary hours of labour are employed in the practical or mechanical performance of their work, their hours of recreation may be occupied in obtaining, in the most agreeable manner, the theory, or true scientific principles, upon which their respective trades or employments are based. As this kind of social intercourse will afford suitable opportunities for cultivating and stimulating the better feelings of human nature, and of repressing and subduing the merely animal passions, it will thus become a powerful moral instrument in the elevation of character, and in fixing the habits of the future man, at that period when the bias of character is almost invariably formed for good or for evil: it is submitted as an object worthy the support of all who desire to see the rising generation grow up in habits of intelligent industry and moral rectitude, essential to their permanent welfare.

This object is proposed to be attained by a course of evening instruction in classes, under competent teachers; and by a library for reference and circulation, and a collection of casts and models.

The school will be open from five until ten in the evening. Subscription, 4*s*. per quarter, payable in advance. — *M. J. B. A.*

School of Design. — It having been considered important that instruction should be afforded to those engaged in the preparation of designs for the various branches of the manufactures of this country, a grant was made during the last session of Parliament for the furtherance of this object; and, under the sanction of the President of the Board of Trade, the School of Design has been established, in the rooms at Somerset House, lately occupied by the Royal Academy, for the purpose of teaching design, including light and shade, colour, modelling, perspective, &c. There is a Provisional Council of fourteen persons, and the director is J. B. Papworth, Esq.

Masters, under the general superintendence of Mr. Papworth, will be employed to afford instruction in the various branches above enumerated.

Lectures will also occasionally be given on the principal subjects connected with the ornamental art.

A large collection of drawings and casts for the use of the School has been provided.

Such persons as are desirous of attending, must apply to one of the council, or to the director.

The students, before admission, must have made some progress in drawing, and candidates are to be examined by the director, who is to report thereon to the council, by whom the students are to be admitted; the director, however, is vested with a discretionary power of admitting, as probationers, such applicants as may be considered by him qualified, until the decision of the council be ascertained.

Each student is to be subject to reprimand from the director, and to expulsion by the council, on the representation of the director, or otherwise.

The students are to have admission to the different lectures gratis.

In case of misconduct, the director has power to suspend the attendance of the student, until the decision of the council is known.

The payments of the students are to be made monthly.

The hours for attendance to be daily, from ten to four.

A vacation of two months will be allowed.

The students are to find paper, chalk, &c. Each student is to pay 4*s*. per week, such sum to be paid in advance from the first of each month.

Admitting the Public, free of Expense, to all Depositories of national Monuments and Exhibitions of Art in national Buildings. — We have great pleasure in recording the following resolutions, which were passed at a public meeting at the Freemasons' Hall, Great Queen Street, London, May 29. 1837, Joseph Hume, Esq., M. P., in the chair.

1. That a frequent contemplation of works in the fine arts, of historical and literary monuments, and of objects of natural history, is eminently conducive to the instruction, refinement, and rational amusement of the people; and that this meeting views with satisfaction the increased facilities lately given to the public to view the collections contained in the British Museum and National Gallery, whilst the decorous conduct of the people visiting those collections proves that they fully appreciate every opportunity of instructive recreation.

2. That a free and gratuitous access to every national building or establishment containing works of art, historical and literary monuments, and objects of natural history, is the undoubted right of the people of these kingdoms, at whose expense such buildings and such establishments have been constructed or maintained.

3. That the virtual exclusion of the public from the monuments in West-

is said, "they know in what class to place such bold paradox-makers," &c.; although the principles were scientifically displayed, and the "cubical box, with its rays and appearance," in a model, stood in the midst of the learned members. There is but one natural system of delineating the objects of nature. I have studied the forms of nature in the abstract, and their natural associations with vision: geometry teaches the first, and rectified perspective teaches the latter. Drawing, taught by my original system, becomes an useful and instructive art. The knowledge of the theory is essential and indispensable to the philosopher and connoisseur as a standard of taste. In conclusion, permit me to ask why I am denied the merit due to me, and wherefore science will not recognise and tolerate in me what ultimately must become the universal doctrine of vision, and the only perfect system of delineation? — *Arthur Parsey. No.* 23. *Piccadilly, May,* 1837.

Bursting of a Hot-Water Apparatus, &c. — In p. 267. there is a communication from Mr. Mallett, referring to a hot-water apparatus, fixed by Turner and Walker, at Lord Harberton's. I cannot admit that the accident which happened to that apparatus in any degree bears out the theoretic anticipations of Censor. That a longitudinal fissure, of about 2 in. in length, was opened, is quite true; that it was caused by "sheer heat and pressure" cannot be doubted; but how this "clearly proves" that it is impossible, on Perkins's system, to preserve a safe proportion between the receiving and dispensing surfaces, I cannot conjecture.

That the fissure, in this case, was not caused by too large a quantity of receiving surface, will appear from the fact, that, during the two years and a half which have elapsed since this apparatus was erected (and for a considerable time previously), the proportion of surface receiving heat, adopted in this instance, has been the one continually used in hundreds of instances, both by ourselves and others in the trade. Why, then, do they not all burst, being all worked at the same pressure? The real cause may be traced, with much greater probability, to the circumstance (as mentioned to me by Lord Harberton) of this apparatus not having been replenished with water for a period of six weeks (instead of once a week, as directed by us), whereby the water was so much reduced as to stop the circulation, when, of course, the heat was accumulated in the boiler or fire-coil; whence the undue pressure on that part. That this is the true solution of the matter, is confirmed by the fact of the pipes not having worked well for a day or two previously.

It may be proper to state, that the pipes now manufactured for this invention are of a much stronger description than was made at the time this apparatus was erected. Had such been then in use, it is probable the fissure would not have taken place.

Under similar circumstances of inattention, and consequent want of water, I fully believe, from past experience, that similar consequences, from a circulation accidentally impeded, would have resulted to any apparatus on the open, or low-pressure, system. Such an accident happened to a pedestal apparatus at the Patent Office, Lincoln's Inn Fields, London, which was taken down and replaced by one of Mr. Perkins's. — *W. Walker* (*of the Firm of Turner and Walker*), *Hammersmith Works, Ball's Bridge, Dublin. May* 19. 1837.

Art. VI. *Institute of British Architects.*

April 17. 1837. — J. B. Papworth, V.P., in the chair.

Presented. The Antiquities of Sefton Church, near Liverpool, by R. Bridgens, folio, 1822. Observations addressed to those interested in either Railways or Turnpike Roads, by A. Gordon, C.E., pamph. 8vo, 1837. Essay on Heraldry, and its Connexion with Gothic Architecture, by W. L. Donaldson, Hon. Sec. I.B.A., pamph. 8vo, 1837. The Churches of London, by G. Godwin, Jun., No. iv. An Appeal to the Public on the Subject of Railways, by G. Godwin, Jun., pamph. 8vo. Specimen of red Marble from New Haven, in the Peak, Derbyshire. Three Prints of the proposed Improvements at the Spa, Scarborough.

The following Letter, addressed to the Secretary, was read: —

"British Museum, April 12. 1837.

"Sir,—Having laid before the Trustees your letter of the 25th Jan. last, addressed to Sir H. Ellis, I am directed to transmit to you, for the use of the Institute of British Architects, a copy, in large paper, of the several volumes published by the Trustees, in Illustrations of the ancient Marbles and Terra Cottas preserved in the Museum.

"The Trustees desire me to add that they have very great satisfaction in making this contribution to the library of the Institute, and endeavouring to promote the objects for which His Majesty has been pleased to grant the Institute a charter of incorporation. I am also to beg that you will offer the especial thanks of the Trustees to the Council, for the donation of part i. vol. i. of the *Transactions of the Institute*.

"I have the honour to be, &c.,

"T. L. Donaldson, Esq." "J. Forshall, Sec."

The books are: — A Description of the Collection of the Ancient Terra Cottas in the British Museum, with engravings: 4to. London, 1810. A Description of the Collection of Ancient Marbles in the British Museum, part i.: 4to, 1812. Part ii., 1815. Part iii., Townley Marbles, 1818. Part iv., Bas Reliefs from the Temple of Apollo Epicurus. Part v., Sepulchral Monuments. Part vi., Pediment of the Parthenon. Part vii., Metopes of the same.

Papers Read. On the Authenticity of Vitruvius, as the Author of the ten Books of Architecture ascribed to him from the German of Schultz. A Description of the recent Discoveries made on excavating the Ground, on which anciently stood the principal Buildings of the ancient Abbey of St. Mary, near the Walls of York, by P. F. Robinson, V.P.

T. L. Donaldson, Hon. Sec., offered some observations upon the different styles of Pelasgic or Cyclopean constructions existing in Greece.

May 1. 1837. — At the Annual General Meeting held this day, the same officers were elected as last year.

The Marquess of Northampton, and the Rev. R. M. Pemberton, of Church Stretton, Shropshire, were elected Honorary Fellows.

The following Report of the Council was read: —

"If on former occasions the Council had satisfaction in rendering an account of their proceedings for the past year, they have at this meeting a peculiar gratification in contemplating the distinguished success which has attended the Institute during the last twelve months. The members are already aware that His Majesty having graciously granted a charter of incorporation, the Council had anticipated the most favourable consequences from this circumstance. But they had little foreseen that, in becoming a body corporate, the Institute would have derived such immediate fruits from this important station among the scientific bodies of the empire. The Royal Societies of London and Edinburgh, the Royal Society of Literature, and Royal Geographical Society, as also the Institution of Civil Engineers, have interchanged transactions with us. The Council, relying on the liberal spirit which actuates the Society of Antiquaries in their promotion of all subjects connected with archeological research, applied to that body for copies of the works which they had published. This application was liberally met by that Society, and in consequence our library has been enriched by the addition of fourteen volumes of the Archeologia, and the series of Carter's Illustrations of the Cathedrals, &c. Similar success has attended a like request to the Trustees of the British Museum, who have in the most gratifying manner presented to the Institute large paper copies of the seven valuable volumes published by them upon the terra cottas and marbles of the national collection. Three of these volumes are highly interesting to the Institute, being illustrations of the sculptures of the Parthenon, and of the Temple of Apollo Epicurus at Bassæ, near Phigalia, and may be claimed as peculiarly belonging to Architecture. This series is very valuable as a work of reference to the architectural student, who may here contemplate the splendour which must ever result from the union of the finest productions of these two branches of art.

" Another event of great importance, which has marked the past year, is the publication of the first part of the first volume of our Transactions. This has been prepared and published, less as an evidence of the active zeal of the Institute in carrying out the purposes for which it was founded, than to prove to all interested in the art the use that would be made of the contributions received from their correspondents. Within six weeks from the first appearance of this part a second edition was required and has been published, and the various periodical publications have, almost without exception, noticed the Transactions as a production creditable to the Institute.

" The Council have been enabled also to engage the talents of able professors to lecture upon the departments of botany and geology more immediately connected with architecture. Accordingly series of lectures have been delivered by Dr. Dickson, upon the physiology, structure, and properties of woods used in construction, and by Mr. Wilton Turner upon geology, which the Council hope have not been without advantage to many of the members. It has been matter of regret that the lectures did not command a larger number of auditors. This mode of conveying instruction in practical architecture, and the new branch of knowledge now first brought to bear upon construction, is somewhat a novelty in the profession; but it is to be hoped that a more familiar acquaintance with the importance of such pursuits, and the great use to which they may be applied practically, will insure a more numerous attendance on future occasions.

" The Council are in communication with an able chemist, who will during the next session consider chemistry in reference to construction, and by a series of lectures draw the attention of members to those laws, in that department of science, which govern the various substances used in buildings.

" The subjects proposed for prize essays last year not having proved successful, it is to be hoped that they will, at some future opportunity, be productive of happier results; when those who study architecture may be better prepared to view such researches in a manner commensurate with their importance and influence upon the progress of the art, as has been the case in Germany, where of late years many disquisitions have appeared on these branches of investigation. The Council trust that the variety, novelty, and interest of the subjects recently proposed for the medals may elicit considerable information, and produce valuable additions to the standard works which now form the library of the architect. In the literature of architecture little has hitherto been done, except to develope those principles which guided in each particular style the architects of Egypt, Greece, Rome, and the middle ages, in their admirable edifices: the mind, however, being fettered too often, in such works, with a somewhat restricted limitation to each particular class, it is desirable that a more enlarged view should be taken of the subject, and that the architect may be excited to think for himself, to seek for new impressions from new sources, be thrown more immediately upon the resources of his own mind, and thus avoid a mere slavish imitation of established precedents.

" The correspondence of the Institute has been greatly extended during the past year; and letters from the Rajah of Tanjore, as also from architects in America, encourage us to expect communications from those countries at once new and instructive. Our relations with Germany have also been increased; and the Institute have seen with satisfaction their Honorary and Corresponding Members not only contributing useful information, but also some of them, as Messrs. Klenze and Ottmer, coming amongst us and being received with the cordiality and respect due to their distinguished reputation. It has always been a subject of hope that the formation of this Institute might give an impulse and movement to architecture throughout the world. It was therefore highly gratifying to the Council to learn from their Honorary and Corresponding Member, Mr. Town of New York, that the architects of America, influenced by the example of their English brethren in art, had taken steps to found an Institute of Architecture, with branch societies in four of the principal cities of the United States.

"The Council cannot allude but in terms of deep regret and sincere respect to the loss which the Institute has sustained in the death of its early benefactor, Sir John Soane. A deputation had the melancholy satisfaction of paying the last tribute of respect in following to the tomb the remains of their venerable professor; and it is to be hoped that the profession may derive from the Soane Collection all those advantages which its founder had fondly hoped would result from his bequest to the nation. There are few architects whose career has been marked with more severe animadversion, and at the same time more honourable testimonials of respect, than the late Sir John Soane. It is to be desired that, as the peculiar eccentricities into which his taste wandered are too obvious to mislead the rising generation, greater justice may henceforth be done to those services which he has really rendered to the art, and to those points of excellence which distinguish many of his productions.

"The decease of Lord Kingsborough, within a few weeks after his election as an Honorary Member, has caused another loss to the Institute. This gifted nobleman, stimulated by an honourable desire to illustrate the antiquities of Mexico, incurred a very large expense in a publication, from the sale of which he could not anticipate any adequate return. It must be matter of satisfactory reflection to the members, that they have been able to confer this mark of their respect, so justly merited, and which, they are assured, was highly gratifying to the feelings of him who closed an early and active career in the promotion of art and science.

"Since the last Annual General Meeting the Institute has received an accession of six Fellows, six Honorary Fellows, and nine Associates, many of them practising in distant parts of the country. There has been an addition of seven Honorary and Corresponding Members. It has been with great satisfaction that the Institute have elected three Members of the Royal Academy as Honorary Fellows. Conscious that an Institution such as this, founded for the special purpose of promoting the best interests of architecture, and diffusing its principles as widely as possible, was justified in expecting the cordial cooperation of every member of the profession, the Institute felt that it was due to the peculiar position of the architects, then Members of the Royal Academy, to receive them into the body of the Institute in the class of Honorary Fellows. A special modification of the rules and regulations was made to that effect, and accordingly Sir R. Smirke, Sir J. Wyatville, and Mr. Cockerell have joined the Institute in this class.

"There have been added to the library and collection, 170 volumes, 50 prints, 50 varieties of woods, 300 specimens of stones and marbles: a pedestal of Devonshire marble, which is an evidence of the beauty of our native productions, has been presented by Mr. Fowler, the Honorary Secretary, and has been appropriately surmounted by a bust of his Majesty, the gift of G. Rennie, Esq., the sculptor.* The extent of these acquisitions, and the numerous attendance of members and visitors at the ordinary meetings, have forcibly proved the necessity of finding more convenient and spacious

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"* The variety and number of these accessions have rendered it necessary that a catalogue should be prepared of the books, prints, models, casts, marbles, drawings, and other objects which have accumulated. As soon as the session is closed, such a work will be commenced, and published during the vacation.

accommodation for the Institute. The Council feel more and more impressed with the just claim which a society, constituted as the Institute of British Architects, has upon the assistance of Government, for a suitable locality in which to hold its meetings, and to deposit that valuable collection which must eventually become of great use to all connected with architecture. The rent of appropriate apartments, in a central and eligible part of the town, is so heavy as to cripple and limit the extent of the usefulness to which the exertions of the members might be carried. The Council, therefore, confidently hope that His Majesty's Ministers will grant them rooms in some public establishment. In the mean time, it is necessary to provide for our accommodation, and the Council are looking out for apartments in some convenient situation.

"A balance sheet of the receipts and disbursements of the past year accompanies this Report.

"Among the contributions to the funds, the Council cannot but call attention to the honourable and liberal spirit which has actuated those of their members who, being exhibitors of designs for the new Parliament Houses, transferred their shares of the proceeds to the Institute, making an aggregate sum of 97*l.* 10*s.*

"The expenses, also, of the charter have been rendered less onerous upon the general funds by the contributions of 114*l.* by members, independent of part of the sum of 97*l.* 10*s.* previously mentioned; thus leaving only 72*l.* 17*s.* 6*d.* to be provided out of the general funds. The Honorary Solicitor declined making the usual professional charges for his time and attendances: it is proposed to present to him a piece of plate, which has been prepared for the purpose, in acknowledgment of his efficient and gratuitous services on this and all other occasions.

"The Council cannot but be conscious, in common with all the members, of the respectability, character, and importance which have attached to the Institute from the happy choice made in the first President. Under the original constitution the election of the same president was restricted to two years, and it is not in contemplation to recommend any alteration in that rule; but a new existence now commences under the charter, and the old regulations are no longer in force. The Council, therefore, beg to suggest, that it would insure the present state of prosperity and confirm the usefulness of the Institute, if, in accordance with the terms of the charter, His Lordship could be prevailed upon to continue to hold that distinguished station among us, in which he has already rendered such essential service by his active exertions and cooperation, and in which he has won to himself the gratitude, respect, and esteem of the whole body, by his condescension and kindness to every individual member.

"The Council, in rendering this account of the state of the property and affairs of the Institute, and in taking this brief review of its proceedings since their appointment, trust that they have fulfilled the duties which have devolved upon them to the satisfaction of the members. They cannot, however, but observe, in conclusion, that, great as may be the zeal which may actuate a council, at any period, in promoting the welfare and success of the Institute, the usefulness of this Society cannot be carried to its full extent, but must fall short of the just expectations of its efficiency and utility entertained by all classes and in all countries, unless the members in general exert themselves individually in contributing matters of information and instruction for the consideration of the ordinary meetings. They should constantly have their attention directed to the purposes of the Institute, and eagerly seize every opportunity that may arise in their own experience, or which may offer from other sources, of bringing before the notice of the Society all matters interesting either from their novelty or importance. In adverting to the papers which have been contributed during the past session, it must be noticed, with regret, that only a small portion have been derived from the Fellows. The communications have been chiefly from the Honorary Members, the

Associates, and from the Council, whose exertions as such might well excuse them from other contributions than those which necessarily arise from their official duties. It is earnestly recommended to the members generally, that they should exert themselves to avoid any deficiencies of this kind, which might prove injurious to the character and prosperity of the Institute."

May 15. — J. B. Papworth, V.P., in the chair.

Elected. M. G. A. Blouet, architect, of Paris, author of the *Restoration of the Baths of Caracalla,* &c., as Honorary and Corresponding Member.

Presented. Print of a Portrait of Mr. T. Tredgold. Print of the Tilers' and Bricklayers' Almshouses at Ball's Pond, Islington. Architectural Antiquities of Norfolk, by J. T. Cotman. Mazoi's Pompeii, part iii. Prints of Buildings designed and executed by W. F. Pococke. A Letter on the Subject of widening the Poultry, by S. Angell. A Cast from a Model of the Greek Obelisk at Karnack, executed in slate, under the direction of I. Bonomi, for Lord Prudhoe. 11 specimens of Baliscombe Marbles, from the marble works of Mr. Woodley, at Marychurch, near Torquay. Second Annual Report of the Poor Law Commissioners for England and Wales. The Churches of London, No. v.

Read. A paper on the recent Topographical Discoveries in the Roman Forum, by the Rev. R. Burgess.

Exhibition of Bruce's Architectural Drawings. Major Cumming Bruce, M.P., exhibited a series of views of the Roman antiquities in the ancient provinces of Rome in Northern Africa, taken by Bruce, the traveller, with the plans, elevations, and sections, drawn to a scale; and prefaced them with a paper, showing the means by which Bruce was enabled to penetrate into the country, and sketch the ruins of these buildings.

May 29. — P. F. Robinson, V. P., in the chair.

Elected. H. Roberts, architect, as Fellow; J. Blore, architect, and J. W. Wylde, as Associates.

Presented. W. R. Hamilton's third Letter to the Earl of Elgin on the new Houses of Parliament. Elements of Architectural Criticism, by J. Gwilt: 8vo. Interior View of the Senate House, Cambridge. 12 copies of a Memoir on Bruce's Journeys, by Major Cummin Bruce, M.P. Print of the De Dustanville memorial in Cornwall. Four volumes of original Drawings by the late G. Dance, Esq., R. A., architect.

M. Hittorff exhibited a series of Drawings illustrative of his restoration of the Temple of Empedocles, according to the polychromic system; and the translation of a paper, by M. Hittorff, on this subject was read.

June 12. — M. F. Robinson, V.P., in the chair.

Presented. Journal of the Royal Geological Society, vol. ii., and vol. vii. part 1. Barlow on the Strength of Materials, and on Construction: 8vo. Account of the Almshouses at Ball's Pond, Islington. The Manor House and Church at Great Chatfield, Wiltshire, illustrated by T. L. Walker: 4to. White on Cementitious Architecture. Rapport présenté au Conseil Municipal de la Ville de Paris: 4to. Lithographs of Pococke's Designs for the new Houses of Parliament. Temples, Ancient and Modern, by W. Bardwell: 8vo. The Churches of London, No. 6. Pamphlets, and two specimens of Lava, enameled, from M. Hittorff. Specimens of Tile, from F. Lush.

Read. A paper, descriptive of the Construction of the Roof of King's College Chapel, Cambridge, from the drawings, observations, and measurements of W. C. Milne, Fellow. An Essay on the Proportions and Embellishments of the Jewish Columns, called Jochin and Boaz, as described in the Holy Scriptures, by P. Leigh, Esq., Fellow. A Paper on the original Architecture, subsequent Alterations, and recent Restorations of the Chancel of the Church of Stratford upon Avon, by J. Britton, Esq., Honorary Member. A Letter from Mr. E. Carter, 66. York Road, describing his invention of a Valve for Gas-pipes.

THE
ARCHITECTURAL MAGAZINE.

AUGUST, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *On the ancient Castles of Britain; their Security and Strength; their admirable Construction as Fortresses of Defence, before the Invention of Cannon; and the Devices employed in their Design, for protecting the Garrison, and for deceiving the Enemy, in the Case of a close Siege, &c.* By JOHN ROBERTSON, Architect.

BY tracing out, amidst the venerable ruins of ancient fortifications still existing in this country, their plan and general design, and by investigating the original causes of the peculiar construction of these monuments of antiquity, we are led to consider the progress of the arts, as well as the manners and customs of a people who required for their security such strongholds of defence; while the ingenious devices which the necessity for such security had suggested, and the means provided for the convenience of those who were to defend the fortifications in times of war, evidently evince the ingenuity and skill of the architects and engineers who had designed and executed them. The number of years, however, which have elapsed since these ancient remains were erected, render it necessary, in order to form a correct judgment upon them, and of those who had erected and defended them, that we should divest our minds, as much as possible, of the idea of considering the manners and customs of the present time as a standard by which to judge of that of the darker ages. A few important historical facts may be gathered by attentively examining these venerable remains of art, which are now speedily losing their antiquated forms, by the common decays of time, and by the encroachments of modern improvements. The investigation, however, must not be confined to any one building, but extend to the comparison of several of these structures one with another, in order to arrive at a just conclusion as to the points the architects intended to accomplish in their peculiar design and construction; which latter will be found to be very much alike in the whole of them, but the details varied in each; while the principles of fitness were studiously attended to in the construction of them all.

Those castles erected in the tenth and eleventh centuries, on which the following are a few general remarks, were usually built on the brow of a hill or on the confines of a river; and consisted of a principal and smaller tower, the former being so situated as to command an extensive view of the surrounding country. An area was enclosed all round them for the use of the garrison, and they were fortified with strong outworks and deep ditches, over which latter drawbridges were erected. With regard to the structure itself, nothing could be more fitly adapted to serve the double purpose of security and state, than the ingenious devices employed in different parts of the building; but more particularly in securing the entrance to the fortress, so as to render it difficult of penetration by an enemy, and, at the same time, so magnificent as to suit the dignity of the lord of the castle.

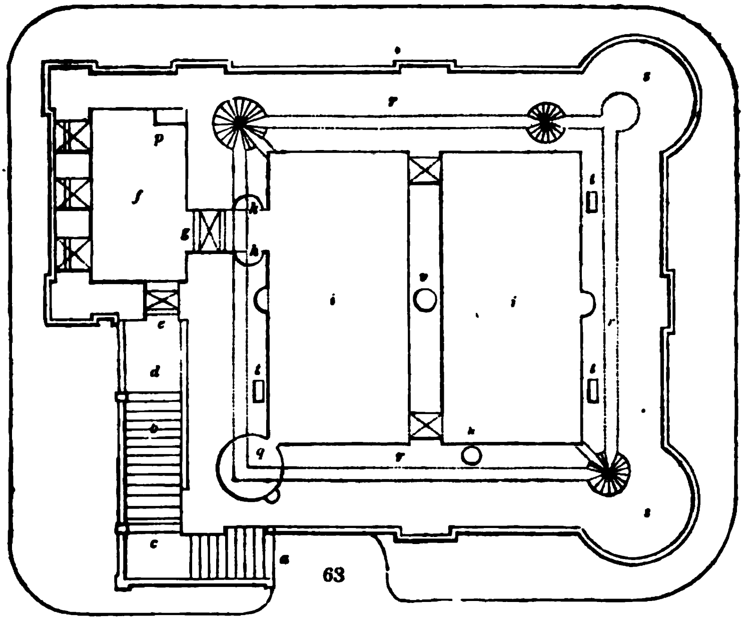
The entrance was not in the lower story, or on the ground-floor, as in other buildings, nor even near the ground, where it might have been easily approached. It was by a grand portal, placed at a considerable height, to which a stair that went partly round two fronts of the castle, ascended. Before, however, the grand portal could be entered, the drawbridge had to be passed, which, when pulled up, cut off all communication with the stair; and about the middle of the steps there was a strong gate, which had to be forced before coming to the drawbridge. For farther security, the portal attached to the building was not the entrance to the fortress itself, but merely the entrance to a small tower; and both it and the latter might be destroyed, without the principal part of the castle, where the garrison was stationed, sustaining much injury. In this small tower was a vestibule, to which the entrance, or portal, led; and from this vestibule there was a second entrance, through another portal, placed in the thickness of the wall of the main tower, which was the real entrance to the castle. Both the first and second portals were each defended by a strong gate, and by a portcullis, sliding in stone grooves.

In these portcullises were the principal strength at the entrance of a fortification, against the attacks of an enemy, before the invention of cannon. They were composed of strong slabs of timber, closely framed together in the manner of grating, and transverse bars, for strength, placed so closely together as to leave only small square openings; the whole being well fenced with iron. They were made to draw up into a vacuity in the thickness of the wall, and to slide up and down in deep stone grooves on each side within the arch of the portal; which grooves could not be injured without pulling down the wall in which they were placed. On the under side of the framework there were pointed spikes of iron, so as to strike firmly into the ground when it was let down; or to destroy anything which might happen to be under the portcullis when it was let fall from a height, which was frequently done at the entrance of the first of the enemy.

It thus appears, that before the enemy could gain or pass the entrance leading to the principal part of the castle, there were three strong gates and two portcullises to be forced or destroyed; and even before the first portcullis could be approached, which was placed within the arch of the first, or grand, portal, the gates on the middle of the steps had to be forced, and the drawbridge replaced, or a substitute for it erected. With the exception of a small sally-port, there was no other entrance whatever to the castle but by the well defended grand entrance just described; and this sally-port was merely a small door, so situated immediately under the drawbridge, that, in any attempt by the besiegers to force it, they were annoyed from the first portal, and assailed by stones, and other weapons, from every part of that side of the building in which it was placed. To render the difficulty of forcing it still greater, it was placed 8 or 10 feet from the ground, so that it could not be approached but by a ladder, at the top of which no plat, or landing, was to be found for the assailants; and, even in the event of its being secured by the enemy, the passage further was difficult to be forced, as there was only a narrow spiral staircase leading from it to the rooms above, which was just of sufficient width to let one person pass at a time, and secured by strong doors at the top.

In order to comprehend the foregoing arrangements, let us suppose *fig*. 63. to be the plan of the first floor of a castle constructed in this way: *a b* is the grand staircase, leading to the portal, and at the landing (*c*) there was a strong stone archway and gate; *d*, the situation of the drawbridge; *e*, the grand portal, and situation of the first portcullis; *f*, the vestibule; *g*, the entrance from the vestibule to the tower, behind the gate of which entrance the second portcullis was placed; *h h* were niches, having stone benches in them, for the convenience of those who kept the castle guard; and *i i* were, of course, the principal apartments for the garrison.

These castles were so well designed for the protection of the garrison in cases of a close siege, that the difficulty of forcing them, even after the outworks were taken, was very great; and the manner of constructing the openings, so that the besieged might neither be annoyed by the instruments of the assailants, nor experience any danger from firebrands, at the same time that the besiegers might be annoyed from within, are very curious, and extremely ingenious.



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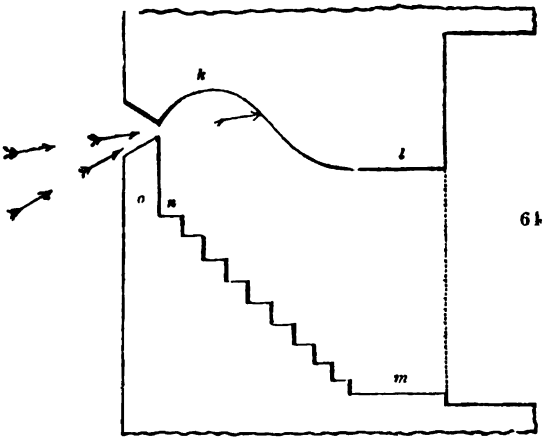
In the first place, there were no windows whatever on the ground floor, and even no other openings, except a few loopholes on those sides of the building which were the most difficult to attack. These openings, where they occurred, were not more than 6 in. square; and they were situated in such places, and constructed in such a manner, that no weapon thrown in at them could enter far enough to fall into the apartments to do mischief, or fall farther than the bottom of the arches through which they were approached. On the first floor, also, on which was the entrance, there were no windows in the principal part of the structure, nor, indeed, any other openings, except a few loopholes; and not even these on the entrance side, as they would have been too much exposed to the enemy, in the event of their gaining the steps to the drawbridge. In the third story, which contained the rooms of state, there were most magnificent windows; but the apartments were so lofty (generally between 30 ft. and 40 ft. in height), and the windows, which were at a very great height from the ground externally, were placed so near the ceiling internally, that they rendered it almost impossible for any weapon to be shot into the apartments in such a manner as to do harm; because over each window was a low arch, the whole thickness of the wall, which an arrow, stone, or firebrand, in its ascending course, would strike against: and, even in the event of any artificial means being erected near the castle, so as to place the assailants on a level with the state apartments (for no natural mound, or other elevation, was suffered near a fortress, to give this advantage to an enemy); or, in the event of any weapon being shot from a distance with sufficient force to enter these apartments horizontally, then, as the windows were at such a great height above the head, any sharp instrument would merely lodge itself in the opposite wall, and any instrument or weapon not sharp would just strike against that wall, and, having spent its force, fall harmlessly to the floor.

From the manner of constructing the loopholes in the ground floor, it is evident that, while they admitted a portion of light and air, any offensive weapon could hardly enter the apartments in which they were placed. *Fig.* 64. is the section of an arch through the thickness of the wall, showing a section of the loophole, and the steps ascending to it. The loophole is placed at the outer end of the arch, and, by the latter being raised at *k*, it is not only placed at the top of the arch, but considerably above the crown of its entrance at *l*. As the loopholes, even on this floor, are at such a height above the ground externally, that any instrument shot into them must take an ascending course, it is clear that it would strike against the raised part of the vaulting at *k*, and, consequently, spend its force; and, as the steps do not commence at the entrance of the arch, the level part (*m*) at the foot of them would receive any weapon or firebrand which had spent its force at *k*; so that it would but very rarely even enter the apartment. Only the crossbow-men standing on the upper step at *n* could be hurt by the entrance of a weapon; and not even they, unless they were standing at the loophole, taking an aim at the enemy, the very moment it was



shot. These arches appear to weaken the walls, which they would certainly do, to a great extent, if the floor at *m* were carried out level to the perpendicular of the inside of the loophole; but the steps, which are united with the whole mass, give great strength to the wall; and there is sufficient thickness left at *o*, which makes this by no means a weak point against the attacks of an enemy. This floor was generally vaulted, and, in consideration of its strength and darkness, it was destined to hold the stores.

The apartments of the first floor, on a level with the entrance portals, were usually from 20 ft. to 25 ft. in height. Here there were no windows in the principal part of the fortress, nor even loopholes on the entrance side, for the reasons before assigned; but in the vestibule on this floor there were generally large magnificent windows (as shown on the plan); and these could only have been there to give dignity and importance to the grand entrance; because, as it has already been observed, the small tower, containing the vestibule, could have been destroyed without the great tower sustaining any material injury. No part of the garrison was stationed in the vestibule during a close siege; and the room over it, where the first portcullis was worked, had only small loopholes. From this room the men working this machine could easily escape by the secret passages leading to the top of the second portcullis, thence through the thickness of the wall (which passages will be hereafter described). The apartment under the vestibule was destined for the prisoners, so that any weapons shot in at the vestibule windows could only annoy those poor wretches in confinement, by its falling through the trapdoor in the floor (*fig.* 63. *p*) for admitting air to the dungeon. The loopholes of the upper floors were larger than those of the ground floor, which they admitted of being made, as they were at a greater height above the ground. They were otherwise constructed in the same manner as those of the ground floor, except that, instead of stone steps ascending to them, there was merely a stone stage erected for the crossbow-men to stand upon. The guard-chamber was on the first floor, and was made in the thickness of the wall (*fig.* 63. *q*); and on this floor, also (however astonishing it may appear to us in a more civilised age), the chief part of the garrison was lodged. Their beds were merely straw spread upon the floor, on which they lay indiscriminately; the officer of the guard, however, having his small apartment (which had a fireplace and loophole) exclusively to himself.

In the rooms of state on the third story there were also loopholes behind the arras, which were constructed in the same ingenious manner as the others on the floors below; and, in addition to what has already been said respecting the magnificent windows of these apartments, it may be farther added, that the arches cut in the walls to give light from them were purposely constructed so low and so close to the tops of them, that it was almost impossible for any weapon (except on such uncommon occasions as have been before observed) to pass across the room, or even to strike the ceiling; for, considering the angle at which any weapon had to ascend, from the great height of these apartments, as also the immense thickness of the walls, it would, in the majority of cases, merely strike against the vaulting over the windows.

For the convenience of the besieged, in cases of a close engagement, so that orders and implements might be speedily communicated and conveyed from one part of the castle to another, there were in the thickness of the walls narrow passages which led from one loophole to another, and from one window to another, all round the building. The situation of these passages is shown by the dotted lines on the plan (*r r*). They ascended and descended at different parts by small spiral steps, and by the acclivity and declivity of their floors. They formed a communication with the different points of defence, with the apartment over the vestibule, and with the cavities where the two portcullises were worked (over *e* and *g*, *fig.* 63.).

The apartments of the fourth and upper story were usually from 15 ft. to 20 ft. in height; and, that precaution which was necessary in the construction of the lower windows not being requisite here, in consequence of the greater height of this floor from the ground, the windows were therefore, in general, large and lofty, like those of the third story. These apartments, and the roofs of the towers, were the most convenient places whence the besieged could annoy the enemy, and where the chief and most powerful instruments of war, such as balistas, catapultas, &c., were placed. These instruments were most destructive, heavy, warlike engines, and were the principal artillery of that age. They were used by an offensive party for battering down walls, and in all cases for throwing large stones, which they were capable of doing to a considerable distance. They were composed of wood, and in such a manner, that the most powerful of them were even capable of throwing millstones. Stones of a considerable size were also thrown by slings.

The devices employed in the construction of these castles, in order to deceive and mislead an enemy, are worthy of notice. There are arches and portals to be seen, which have the appearance of being ancient entrances filled up; but that such were merely to deceive may be known by finding their exact relative situation with the interior, when it will be seen that these false entrances were not only against the solid side walls, but were frequently placed against the end of an outside wall, or against the end of a transverse division wall; so that these seemingly weak parts were, in fact, the strongest parts of the structure; and any attempt at making a breach through them would be labour in vain. There were also small towers placed in one or two situations which had the appearance of being erected to strengthen weak parts of the building (*fig.* 63. *s s*); and these towers themselves had the appearance from without of being weak, from the notion that they contained apartments (which supposition was strengthened by their having loopholes), and, therefore, easy parts to be battered down. But that these erections were merely to deceive is evident, because they were not only placed at the strongest parts of the building, but they consisted of one solid mass from the bottom to the top, with the exception of a small but strong arch on each floor above the ground floor, which led to the loopholes; and their walls were frequently 20 or 30 feet in thickness. The small tower, also, which contains the vestibule, was most substantially built, notwithstanding its affected appearance of weakness. The foundations were exceedingly massive and strong; and, although weapons might be thrown in at the windows of the vestibule, they could do no great injury to this side of the principal tower. Even in the event of the smaller tower being battered down, which would have been by no means an easy task to accomplish, this side of the main tower presented a more substantial front to the enemy than any of the other sides, from the absence of openings on the first floor.

Although the uniformity in the general design of castles built in this age is very great, yet the means to deceive were devised and carried into execution by their architects in a variety of ways, in different buildings; so as to defy the besiegers, from their knowledge of the deceptions of one castle, to know where they were situated, or even to anticipate what the deceptions were, in any other castle; in the same way that the keys of all the locks in a private house have the same general appearance, but the wards so differently made, that the key of one lock cannot (or should not) open any other than that to which it belongs. The different parts where these deceptions were situated in various buildings, and the variety of ways in which they were devised, are without end; and herein consisted the next important points to that of strength to be considered by their architects. It was to observe as much secrecy as possible in regard to these deceptions, that the lords of such castles were so very scrupulous in admitting strangers, or in allowing them to examine the buildings, or in suffering the latter to be surveyed even by those who were known, but who were, in the probability of events, likely to become future foes.

There was much regard paid to the manner in which the stores and prisoners were secured, so that few or no soldiers were necessary to guard them, which enabled the whole force to be employed on the defence. The former were placed in the ground floor, which was so substantially built, and had no openings but mere slits for air (illustrated by *fig.* 64.), that they were perfectly secure from any accidents that might arise from the firebrands of the enemy; and the latter were confined in such a strong dungeon, that their rebellion or escape was impossible.

The dungeon, as before observed, was under the vestibule, and the walls surrounding it were of great thickness, without any openings whatever. The small trap-door for the admission of air, &c., in the floor of the vestibule, was at a great height above the heads of the prisoners, and great care was taken that nothing should be left in the dungeon, by means of which they might reach to it. Through this hole, when the besieged were pressed for time, the prisoners, as they were captured, were lowered down into their dungeon, and their scanty food was likewise let down through this opening: but there was also a communication with the dungeon from the ground floor of the castle. For greater security, the floor of the dungeon was considerably below the ground floor of the castle, and the communication to it was by a steep flight of steps descending through the wall; but these were so narrow, that only one person at a time could pass along them; and at the top of the flight, there was a strong door which shut them out from the ground floor of the main tower. In consequence of these steps being so narrow that only one man could get close up to the door at a time, and their being also so very steep that no one could stand firmly on them, it was impossible for the prisoners to make any effectual efforts to force open the substantial door which secured them in their awful dungeon. The dungeon was, likewise, strongly arched, and the floor of the vestibule was of stone.

The means devised for the easy conveyance of the great engines of war to the upper apartments, and to the top of the castle, as well as the stores to the different apartments, were very ingenious as regards the former and very convenient as to the conveyance of the latter. By examining the plan, it will be seen that it would have been utterly impossible to have conveyed the large beams of wood of which the catapultas and balistas were composed from the lower parts of the building through the spiral staircases and narrow passages; and to have conveyed them up through the floors and ceilings would have created great confusion in the apartments where the garrison was stationed, and much inconvenience in the state apartments. The stores, also, by being conveyed up the spiral staircases during a siege, would have caused disorder among the soldiers. In order to obviate these inconveniences, there were several square wells, or flues (*fig.* 63. *t t*), which were made in the thickness of the wall, from the bottom of the building to the top. These wells opened out in the ground floor, under an arch of sufficient height to admit the turning of a long beam into them. In their ascent there were others branching off from them to the galleries, and there were also outlets from them on each floor; while, by their descending to the sunk floor, the stores were likewise conveniently drawn up through them to the several apartments.

In order to give quick alarm in cases of threatened danger, and, consequently, to transmit orders from one part of the building to another with the greatest possible despatch, there were small flues, about 8 in. square, cut, or rather left, in the thickness of the walls near the inner face, which went from the top of the castle down to several of the apartments below. They were likewise carried all round the castle (and even through the ends of the joisting), and from one apartment to another; so that the most speedy communication could take place between persons at a distance from each other in different parts of the building: they were, of course, used in a similar manner to the speaking-trumpets or pipes of the present day in large warehouses and manufactories.

Provision was made in these castles that the enemy could not cut off their supply of water in a close siege, as also for its easy conveyance to the apartments on the different floors. For these purposes, the well, in the first place, was generally made within the principal tower of the castle: it was frequently under an external, but generally under a division, wall (as at *u* or *v*, *fig.* 63.), so as not to interfere with the apartments, in hoisting water to the upper parts of the building. The opening of the well was carried up to the very top of the castle, where a pulley was placed, by which water might be raised to any height; and there were outlets from the opening of the well on each floor, through which the apartments were supplied. The water in the well would, probably, not rise so high as the level of the ground floor, although the opening of the well was carried up through the solid wall to the top of the building.

The outlets for the smoke, and those for conveying away any filth from the apartments, were well constructed for their respective purposes, while they offered no advantage to an enemy. The fireplaces were made in the external walls; and over the hearth, on which the fire was placed, the boundary of the fireplace, or what we call the jambs, formed a semicircular arch, which was in general very richly ornamented, especially in the state rooms. The flue was a conical cavity, ascending to an outlet, which had the appearance of a loophole from without, and ranging symmetrically with the others. From the angle of ascent of the flues, no weapon shot in at them could do mischief, as it would strike against their upper surface, and, accordingly, spend its force; and, from their construction otherwise, it could not enter the apartments. The outlets from the sinks, &c., were constructed in a similar manner to the chimney flues, but, of course, reversed, and going downwards. Their descent was not, however, in a straight line, but slanting sidewise, with windings to their loopholes; so that it was impossible to throw a weapon into any apartment through them.

The apartments of the lord of the castle were exceedingly large, as well as lofty; and the great arches separating them were highly finished with curious workmanship; the doors were also highly finished, and richly ornamented. The lower parts of the rooms were hung with arras, and the windows were elegant as well as lofty; the arches of which, internally, sprang from cylindrical pillars, and the archivolts round the vaulting were curiously enriched. The whole was fitted up in a superb and elegant manner, to maintain the dignity and state of the commander.

From the foregoing remarks, it appears that the castles erected in the feudal ages were admirably adapted to the purposes for which they were intended; and this, indeed, ought to be the chief consideration of an architect, in the erection of a building in any age or country. If we take into consideration the methods devised in these castles, both for protecting the entrance and the garrison; the mode of construction, so as to protect the besieged from the assaults of the enemy; the devices to deceive the besiegers; the easy manner of conveying the engines of war to the upper apartments; and the method of giving alarm, &c.; we cannot but think that, in these ages, anterior to the invention of cannon, the architects and engineers have displayed much skill and great ingenuity in their art, superadded to their knowledge of constructive masonry.

Paddington, January 19. 1837.

ART. II. *Reasons for having an annual Exhibition of Architectural Drawings and Designs, distinct from the Exhibitions of the Royal Academy of Arts.* By W. S.

IT is acknowledged by all persons connected with architecture, that sufficient room was not given for the exhibition of the various designs of British Architects at the Royal Academy, when held at Somerset House; and it appears that at the new National Gallery they will be very little benefited by the change. Besides, the effect of architectural drawings is almost entirely destroyed, to the common observer,. when they are placed by the side of so much scarlet and glitter, in the form of portraits of military heroes, and other personages in dresses of bright colours, as appear among the paintings exhibited.

From the interest excited by the exhibition of the designs of the new Houses of Parliament, it is clear that the public in general are not wholly incapable of appreciating the merits of such productions, and are not indifferent to improvement in the art of design as applied to buildings.

It is true, that, since the establishment of the Institute of British Architects, and the Architectural Society, some exhibitions of architectural drawings have taken place at different times at their apartments; but these may be called comparatively private exhibitions, as only the members and their friends are admitted. However, from the patronage these Societies and their exhibitions have received from the few, coupled with the lively feeling expressed in favour of architecture in the case of the Parliamentary buildings, it is evident that something on a more extended scale, and of a more public character, is called for.

If a separate exhibition of architectural drawings and designs were established on a broad and liberal basis, it would tend to increase the taste for architectural improvement, and, consequently, would benefit the architects themselves; as the science would become better understood, and its professors more respected and employed. It was said by many, when it was proposed to exhibit the designs for the Parliamentary buildings, that nobody would go to look at them, except those parties immediately interested. The incorrectness of this prophecy is well known, for the number of persons who attended the exhibition far exceeded the expectations of its projectors. If such an exhibition of drawings, nearly all in one style of architecture, and all of only one subject, and by a very limited number of artists, created so much interest and discussion, surely an exhibition of numerous different subjects, by a great number of artists, would prove equally, if not in a greater degree, interesting to all parties, and, to the architect and student, a never-failing source for study and contemplation.

By an exhibition of architectural drawings, it is not meant that they should be confined to mere elevations and perspective views of exteriors and interiors of buildings; but that all drawings, sufficiently well executed, should be admitted, on any subject connected with the art of design, if applicable in any way to architectural purposes; such as designs for sculptured friezes, tablets, ornaments, patterns for papers, carpets, utensils, ornamental details; designs for furniture of every description, drawings of antiquities, &c. By embracing all these various subjects, the exhibition would be interesting and useful to all classes of persons.

Exhibitions on an extended scale would also be serviceable to the profession in another point of view; for artists could there place those of their designs which had been rejected in competitions, so that the public would have an opportunity of judging whether the best design for any building had been chosen; and the certainty that such an exhibition would be given to all the designs, would tend much to destroy the system of jobbing and trickery so constantly practised in such cases. By including in the exhibition designs for furniture, utensils, &c., the attention of the ladies might be drawn to the subject of suiting the style of their furniture to that of their houses; so that the effect of well-studied interiors might no longer be injured by the introduction of all kinds of incongruities in the shape of furniture.

It is only by a general diffusion of the knowledge of architecture amongst all classes that any real love and enthusiasm for the art can be produced; and, undoubtedly, one of the best means that can be employed to draw attention to the subject is a public exhibition, by showing what has been done, and what the art and the artists are capable of doing.

These few remarks are merely thrown out in the hope that the two Societies of Architects will shortly take the subject into their consideration; as there can be no doubt that it would be to the interest of each individual member, if an establishment of the kind were formed.

Tunbridge, March, 1837.

Art. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By William Bland, Jun. Essay VIII. *Relative to the Architecture of small Churches and Cathedrals.*

The Lady Chapel of St. Saviour's Church, Southwark. — *Fig.* 65. represents one side of this beautiful building, which shows a specimen of a series of cross arches, and pillars or piers. The particulars of the dimensions are as follows: —

The span between the piers is 13 ft. The height of the piers is 11 ft. 6 in. The height of the shaft is 10 ft. The diameter of each pier is 23½ in.; and their horizontal section is something of the form shown at *b.* The height of the masonry over the crown of each arch is 2 ft.

Now, in 13 ft. there are 156 in., which, divided by 6, gives 26 in. for the diameter of each pillar: but the diameter is 23½ in., therefore 2½ in. too small; consequently, each pier requires the reduction of 1 ft. 3 in. in the height, taken from the dimensions of the span; thus leaving 11 ft. 9 in. for the balancing height of

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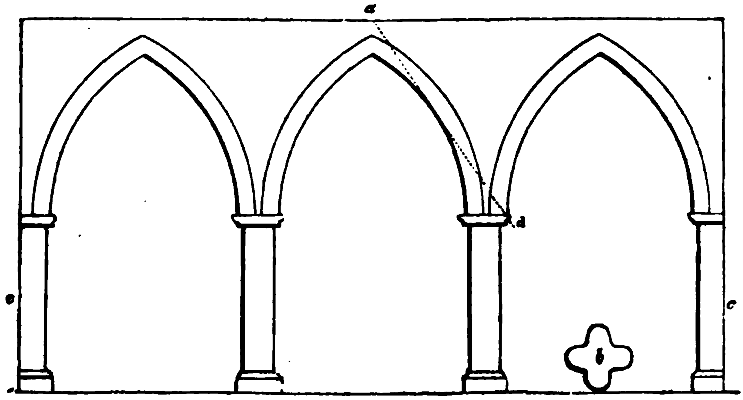

the piers: but the piers are 11 ft. 6 in. As their proportions approach so near to each other, it is probable that a mistake might have been made in the measurement of the diameter, by having allowed a trifle too much. The above proportions exactly coincide with those required for arches and piers running in a single series, as in Hartlip Church.

In the Lady Chapel, it has been stated that several series of arches and piers cross each other at right angles; therefore, according to the experiment fig. 158., Vol. III. p. 418., they will, thus circumstanced, carry double the weight of a single series.

The architects were fully aware of this, and availed themselves of it to give lightness and beauty to the structure, which they have admirably accomplished by the concave section up the four sides of every pillar.

The dotted line *a d* terminates at *d* on the outer edge of the pillar: *c c* are the walls.

Rochester Cathedral.—*Fig.* 66. shows a part of the crypt under the choir of this cathedral, consisting of a series of arches and piers crossing each other at right angles. The particulars of the dimensions are as follows:—

The span between the piers is 8 ft. 7 in. The height of the piers is 6 ft. 1 in. The height of the shaft is 4 ft. The diameter of each pier is 12 in.; and their form is alternately circular and octagonal, and not of one solid piece of stone. The height of the masonry above the arches is 2 ft.

In 8 ft. 7 in. there are 103 in., which, divided by 6, gives 17 in. for the true diameter: but the diameter of the piers is 12 in., and, therefore, 5 in. too small; consequently, each pier requires a reduction in the height from 8 ft. 7 in. to 6 ft. 1 in. to be in the balancing proportion to the span. Now, the piers are just 6 ft.

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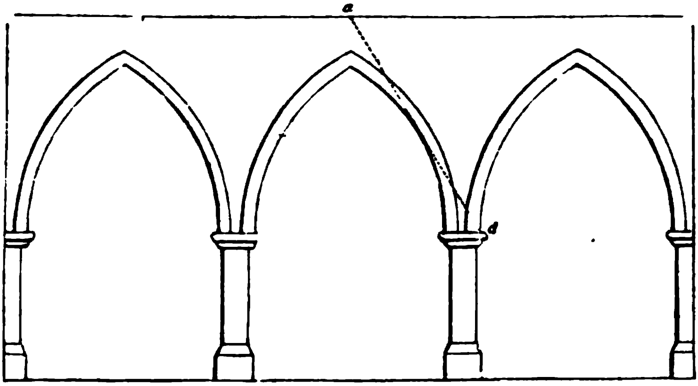

1 in. in height; therefore, they are strictly of the true balancing proportion to the span of the arches. The experiment shown by fig. 158., Vol. III. p. 418., proves the double strength of these cross arches and piers of the under croft.

The dotted line *a d* terminates at *d*, on the outer edge of the pier, the same as in the Lady Chapel.

The Nave of Rochester Cathedral. Relative to the Norman and Saxon arches and pillars near the tower.—*Fig.* 67. shows the arches and piers: the superstructure is not represented, and some of the Saxon arches are omitted.

The particulars of the pointed arches and their pillars are as follows: — The span between the piers is 8 ft. 9 in. The height of the piers is 19 ft. 6 in. The height of the shaft is 17 ft. The diameter of the piers, which are circular, is 5 ft. The height of the masonry above the arches is 7 ft.

In 8 ft. 9 in. there are 105 in., which, divided by 6, gives 17½ in. for the true diameter of the piers: their diameter, however, is 5 ft., or 60 in. Now, 17½ taken from 60 leaves 42½; and, since 2 in. in diameter equals 1 ft. in height, to preserve the balancing proportion, the 42½ in. will give 21 ft. 1 in. more to the height of the piers above the span. Or, 8 ft. 9 in. added to 21 ft. 1 in. equals 29 ft. 10 in. for the balancing height: but the height of the pier is 19 ft. 6 in.; therefore, these may be allowed to be within the balancing dimensions by one third of their true height.

These arches and piers were submitted to experiment by a model; and the result was, that a single arch and pier balanced under one third of the weight of its pier, the masonry above the arch being entirely omitted.

The dotted line *a d* falls on the inside edge of the pier at the point *d*.

The particulars of the Saxon arches and piers (*fig.* 67.) are

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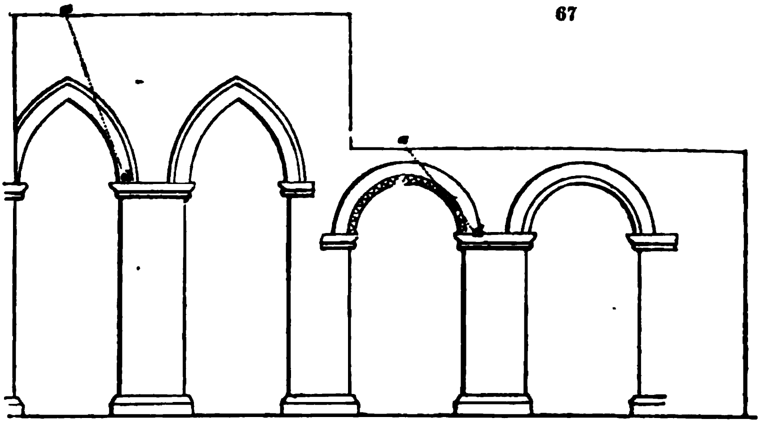

as follows: — The span between the piers is 9 ft. 6 in. The height of the piers is 15 ft. 3 in. The height of the shaft is 13 ft. The diameter of the piers, which are circular, is 5 ft. The height of the masonry above the arches is 2½ ft.

In 9 ft. 6 in. there are 114 in., which, divided by 6, gives 19 in. for the true diameter of the piers: but the diameter of these piers is 5 ft., or 60 in. Now, 19 taken from 60 leaves 41 in., which, as it has been before observed, equals 20½ ft., and, when added to the span of 9 ft. 6 in., makes the balancing height 30 ft.

According to the experiments relative to figs. 149. and 150., Vol. III. p. 410., the pillar of fig. 150. is one fourth less than the pillar of fig. 149.; therefore, the pillar of the Saxon arch should be reduced from 30 ft. to 22½ ft. high. But these pillars are 15 ft. 3 in. high; consequently, they are one third less than their true height, and corresponding, in this respect, with the Norman pillars.

When these arches and piers were submitted to the test of experiment, a single arch and pier balanced under the weight of nearly one half of its pier, the masonry above being omitted. Here is another example of agreement between the Norman and Saxon arches and pillars, which proves the correctness of their respective proportions, and that the strength of both is equal.

The dotted straight line *a d* falls a small distance from the inside edge of the pier, at the point *d*.

In consequence of the result of the experiments relative to figs. 153. and 154., Vol. III. p. 413., a doubt arose as to the truth of 29 ft. 10 in., or say 30 ft., being the balancing height of the Norman pillar, or pier, and arch. To determine this point, the model of the pier employed was 6 in. square at the base, and 36 in. for the balancing height; because 5 ft. in 30 ft. goes six times. The arch composed of voussoirs only, when placed on this pillar, balanced with 5 lb. on the crown; therefore, proving the balancing height to be far above 36 in., it being, indeed, 96 in., and consequently, in proportion, 30 ft.; the supposed balancing height of the Norman pillar is within the true height in the same proportion. The experiments relative to figs. 151, 152, 153, and 154., Vol. III. p. 411., confirm these remarks. Hence, the conclusion which may be drawn is, that the calculations made to preserve the true proportions between the diameter of a pillar, its height, and the span of the arch, are not correct when the diameter of a pillar becomes one third or one half of the span.

Of the Arches and Pillars belonging to the Chapel on the North Side of the Choir of Rochester Cathedral.—The particulars are as follows (*fig.* 68.): —

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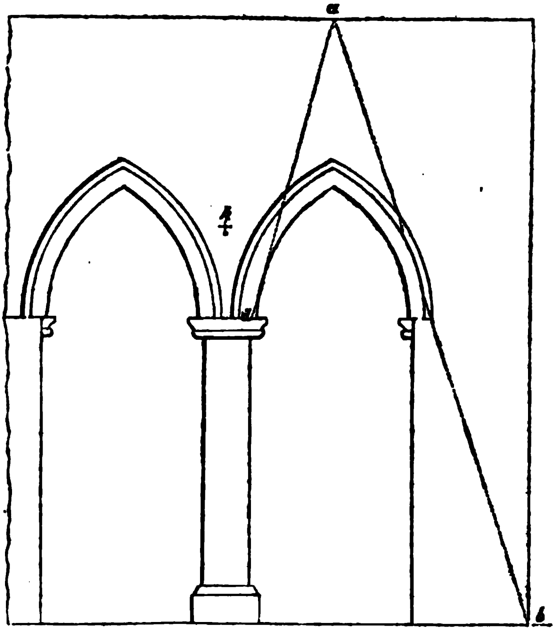


The span between the pillar and pier is 10 ft. The height of the pillar is 18 ft. The height of the shaft is 15 ft. 6 in. The diameter of the pillar, which is circular, is 3 ft. The height of the masonry above the arches, taken from the intrados, is 10 ft.: above this there are other arches, &c.

In 10 ft. there are 120 in., which, divided by 6, gives 20 in. for the true diameter of the pillar; but it is 3 ft. in diameter, or 36 in, and therefore 16 in. beyond the true diameter. These 16 in. will allow 8 ft. to be added to the span for the height of the pillar, which, therefore, should be 18 ft. The height, however is 18 ft. 6 in., and, consequently, only 6 in. over the true dimensions.

It has been shown, when treating of the Norman and Saxon arches and pillars, that, when the diameter of a pillar is greater than one sixth of the span, the balancing height is above that which the usual calculations admit of; therefore, in this instance, it exceeds the proportion of six times the diameter.

Now, as 3 is to 10, so is 4 to 13. On looking at the experiment relative to fig. 151., Vol. III. p. 411., the base of the pillar is 4 in. square, and it balanced the pointed arch on 32 in. in height, or eight times the diameter. Since this experiment is the nearest of any of the other experiments to the proportions of the arches and pillars under consideration, the balancing height of this pillar and arches may be fixed not far from the point *h*, which is eight diameters. I must not omit to state, in justification of the stoutness of this pillar, and those of the Norman and Saxon arches, that they have to support a superstructure of both arches and masonry; consequently, they require increased dimensions above those which were shown to be adopted in the structures of common churches.

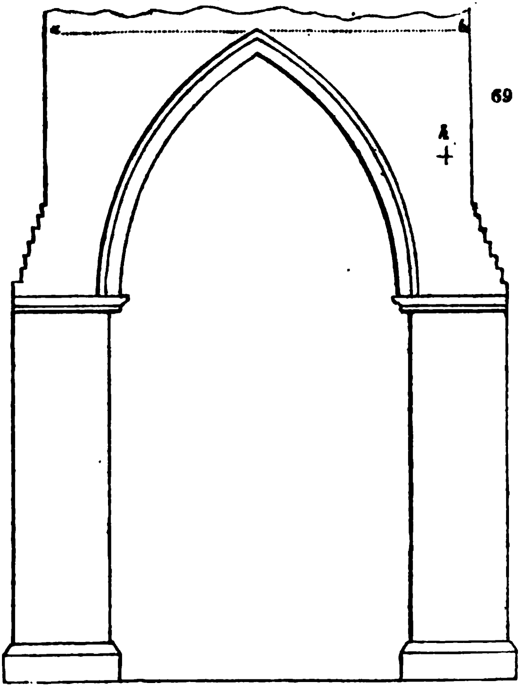
The dotted straight line *a d* falls on the inside edge of the pillar, at the point *d;* and the dotted straight line *a b* lies within the masonry, from *a* to *b*.

Of the Pillars and Arches which support one Side of the great Tower fronting the Nave in Rochester Cathedral.—*Fig.* 69. represents this part of the building: the width from *a* to *b* is assumed. The particulars of its dimensions are as follows:—

The span between the pillars is 26 ft. The height of the pillars is 32 ft. The height of the shafts is 28 ft. The diameter of the pillars is 8 ft. The pillars are square, and one placed diagonally to the thrust of the arch. The height of the masonry above the arch is about 83 ft.

In 26 ft. there are 312 in., which, being divided by 6, gives 52 in. for the true diameter of the pillars. The pillars supporting this arch are square, and are placed diagonally to the thrust of the arch, as before observed. This diagonal diameter is 8 ft., and a square having a 4-in. side gives 5½ in., or a trifle more, for the diagonal diameter; therefore, with this proportion, the square to the 8 ft. diagonal is readily found. For 4 is to 5½ as 8 halves are to 11 halves: again, 11 is to 8 as 8 is to 5 ft. 10 in., the square required.

Now, 5 ft. 10 in. contain 70 in., which is 18 in. above 52, the true diameter; and will therefore allow 9 ft. to be added to the height of the pillars above the span, making the true height 35 ft., or six times 5 ft. 10 in.: but the pillars are 32 ft., therefore 3 ft. short of the balancing proportion; and they are con-



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sidered with their square sides to the thrust of the arch. They, however, are placed diagonally; and, according to experiment, the balancing point is raised, in consequence, up to the point *h*, which is one fourth higher than the square side admits of. The experiment was conducted as follows, the scale being 1 in. to a foot:—

As 5 ft. 10 in., or 6 ft. (the diameter), are to 26 ft. (the span), so are 4 in. (diameter) to 17 in. (span), which is nearly enough.

Now, 35 ft. is the balancing height of the pillars under this arch, which supports one side of the tower of this cathedral; and 4 multiplied by 6 gives 24 in. for the balancing height under the arch of 17 in. span between the pillars, the arch being 16 in. span. The experiment confirmed this; for a 17-in. span, between the pillars of 24 in. in height, just balanced a Gothic arch of 16 in. span, when the pillars stood square with the thrust of the arch; and upon turning these pillars from the square to the diagonal, with the thrust of the arch, they just balanced when they were raised 6 in. higher, or from 24 in. to 30 in., which is one fourth above the original height of 24 in.

The pillars and arch of this one side of the tower have to support a height of masonry above the arch equal to 83 ft.; the total height of the tower, according to *Hasted*, being 136 ft.

As respects the stability of this part of the structure, it may be observed, that, by having the above height of masonry over the arch, it preserves the arch, as well as the pillars, from flying out, as shown by experiments in the foregoing Essays. Again, the tower being placed in the centre of the cathedral, the cross walls and arches become immovable buttresses to its four arches and pillars. And, lastly, in consequence of the four pillars being placed at the four angles of the square of the tower, the arches act with considerably less overturning force against each pillar, as also shown by former experiments.

From all these circumstances, the stability of the pillars and arches, and, consequently, of the tower itself, is placed beyond the least doubt: but yet, on an inspection of the arch fronting the nave, the joints near the keystone have somewhat opened. This proves that the arch is giving way; and, as it has been shown that it could not have proceeded from any lateral yielding, it must then be from a perpendicular sinking in the foundation of one of the pillars. An evil of this kind is often occasioned by the digging of graves for the dead in our sacred temples, which must ever tend to the destruction of these buildings, and, at the same time, endanger the health of the living.

ART. IV. *On the Necessity of connecting Buildings in the Country, and especially Dwelling-houses, with the surrounding Scenery, by Means of Architectural Embellishments.* By SELIM.

THE effect of many handsome houses in the country is entirely spoiled by the want of architectural embellishments around them. Every man of taste must be sensible that a fine architectural composition loses half its beauty when it has nothing near it to harmonise with the building, and unite it to the surrounding scenery; and even a palace has a cold and forlorn appearance, however splendid the building may be in itself, when it stands alone upon a bare expanse of turf. To the picturesque eye there is a something wanting; a frame, if I may so speak, to set off the picture to advantage. Painters, I believe, attach a good deal of importance to a frame, and are unwilling to exhibit their works without one. Why should not an architect insist upon a similar privilege for his works, and be allowed to frame them with such objects as will show them off to the best advantage? No professor of the sister art would allow an inferior hand to finish off the foreground of his picture: why, then, should the architect? I believe modern architects are generally acquainted with the principles of landscape-gardening, and they certainly should claim the privilege of designing the embellishments which are to surround the building, and of laying out the ground near it.

My thoughts have been frequently led to this subject, when I have visited modern houses which have obtained some celebrity in their neighbourhood. Generally speaking, the first impression produced upon my mind has been a feeling of disappointment; arising, in part, from having heard the place overpraised by persons who have had no knowledge of architecture, and no feeling for what is called the picturesque. But, very commonly, there is a just reason for disappointment. The building itself may be a beautiful and striking object; but it does not connect itself with any thing around it. In short, there is no picture; though, perhaps, a very little additional expense and trouble would have united the house with the surrounding scenery, so as to present altogether a beautiful composition. To illustrate my meaning by an example, I may instance a place in my own neighbourhood, which has many advantages of situation, and is considered hereabout as a pattern for a wealthy country gentleman's residence. The house is large and handsome, and consists of a centre and two wings, something in the form of *fig.* 70.; in which *a* is the house; *b b*, the offices; and *c c*, the proposed architectural gardens. It has a fine portico of four columns in the front. It stands on the south side of a beautiful vale, on a gentle eminence, in a well-wooded small park. Behind it, at a short distance, is a steep bank of wood, and in front is a rich confined view over the park, and some beautiful meadows, with a stream winding through them, to another woody bank on the opposite side of the vale; the church and cottages at a distance, and other pleasing objects, combining to form a very delightful landscape, when viewed from the house. When I went to see it, we approached the mansion through a fine hanging wood, which bounds the park on one side; and, coming suddenly upon it, with highly raised expectations, I met my old friend, disappointment; for, with all its natural beauties, nothing could be more uninteresting than the general effect. We found the grass in the park growing for hay, and 1½ ft. high

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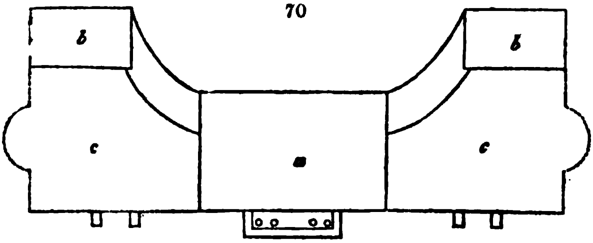

even on the lawn in front. A road, just wide enough to allow a carriage to pass along, led up to the magnificent portico; but, to turn the carriage round, it was necessary to drive into the long grass, or into the court behind the house. At one end, before some of the principal rooms, a small square of grass was close mown, at the other end it was growing for hay; and on a row of broken hurdles, joining one of the wings, some stable-cloths were hung out to dry. These last, though quite out of keeping, were the only picturesque objects visible; for there was neither shrub nor flower, nor vestige of architectural ornament, to enliven the scene; and, though the day was lovely, and the distant objects beautiful, it struck me as one of the dullest-looking residences I had ever beheld. Now, this gloomy effect might be remedied with little expense or trouble, and, probably, would have been, had the architect laid out the ground adjoining the house. I conceive he would, at least, have enclosed with a low balustraded wall, the two spaces at the ends of the principal building as far as the wings extend; placing on the wall, at proper intervals, a few handsome vases, and breaking the line of it with ornamental gateways or stone seats. Within the walls would have been gardens, containing flowers and shrubs, vases and statues, and, perhaps, a fountain in the centre of each. Instead of the present miserable road, which makes the massive portico look almost ridiculous, he would have formed a handsome sweep in front, bounded by a few low obelisks, or other appropriate decoration; planting a few cedars, and other handsome trees, to give a dressed effect to the approach. These additions would completely alter the character of the place, and do away with the cold unfinished appearance which now reigns around it. But still it could not have a cheerful appearance while the grass on the lawn in front was growing for hay. A field of long rich grass is a pleasing object in a proper situation, but is quite out of place near a handsome house. To me, there is something gloomy in the appearance of a large expanse of waving long grass: it also seems to raise the surface on which it grows, and to make every thing around appear smaller than it really is; and, as you know it is forbidden ground, it creates an unpleasant impression of confinement. The space about a handsome dwelling should be free and open, and be kept closely grazed by cattle, sheep, and deer, to give life and cheerfulness to the scene. There is nothing that contributes more to the cheerfulness of a country residence than large herds of animals, apparently enjoying a happy state of freedom within the wide range of a park; and a park without animals would be almost as cheerless as a large city without inhabitants.

Wiltshire, June, 1837.

Art. V. *Liverpool Medical Institution; designed by C. Rampling, Architect.* Communicated by Charles Coxon.

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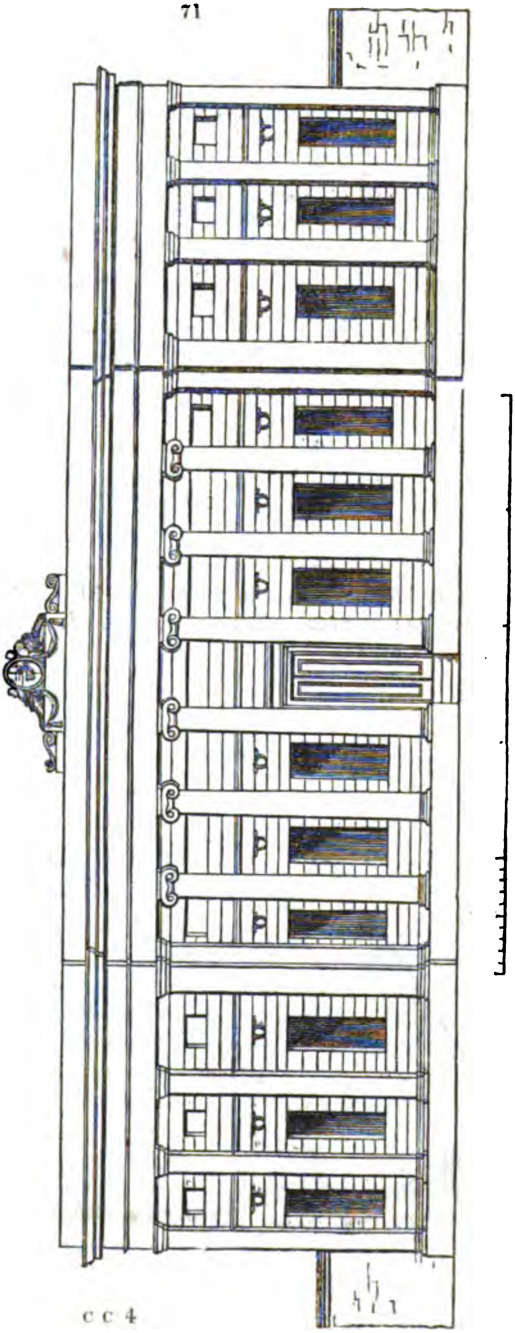

The accompanying plans and elevation (*figs.* 71, 72, and 73.) of this Institution were approved by the Finance Committee of the Common Council on the 14th of August, 1835. The building is now in the course of erection. The drawings, I think, are worthy of a place in your Magazine; and I shall be happy should you coincide with me in this opinion.

Fig. 71. is the front elevation.

Fig. 72. is the ground plan, in which *a* is the hall, 35 ft. by 18 ft.; *b*, the library, 40 ft. by 24 ft.; *c*, office; *d*, committee-room, 24 ft. by 21 ft.; *e*, lecture-room, 40 ft. by 31 ft.; *f*, stage; *g*, depot; *h*, passage; *i*, area; *k*, area; *l*, ashes; *m m*, vacant land; *n*, Hope Street; *o*, Mount Street.

Fig. 73. is the upper plan, in which *p* is the upper part of the lecture-room; *q*, museum, 25 ft. by 24 ft.; *r*, museum,

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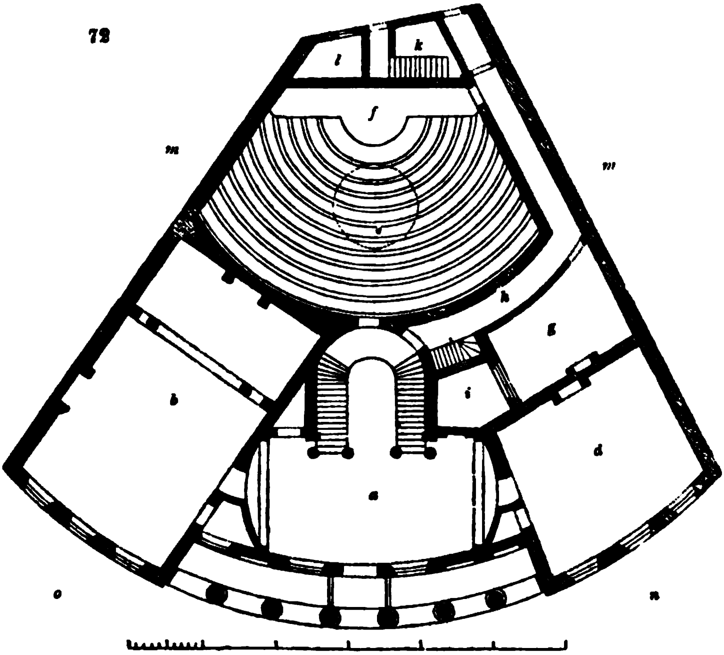

40 ft. by 18 ft. *s*, museum, 24 ft. by 21 ft.; *t*, preparation room; *u*, passage; *v*, area.—*Liverpool, December* 18. 1836.

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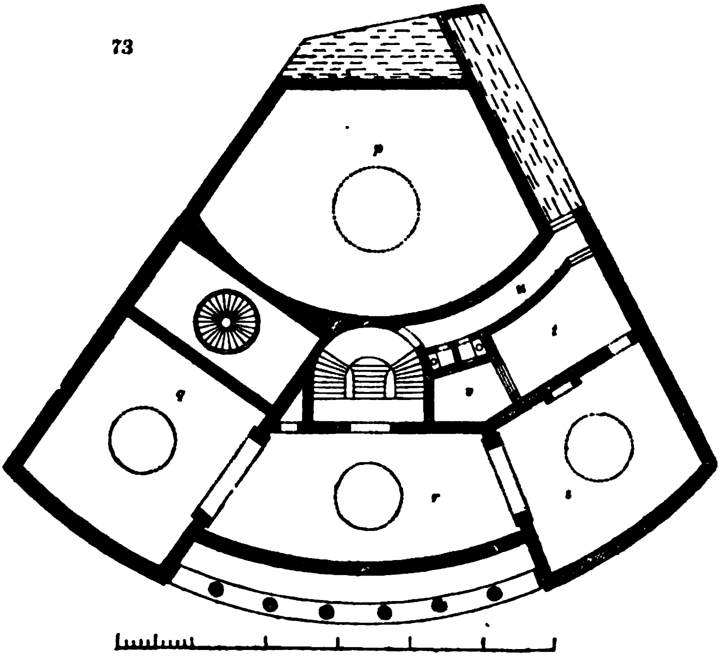
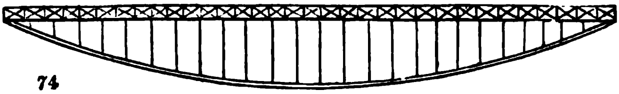


Art. VI. *Compensation Suspension Bridge.* By John Prideaux,

Member of the Plymouth Institution.

Having lately made a visit to Switzerland, I noticed some bridges at Geneva, with the system of suspension (if it may be so termed) beneath the roadway, as (in *fig.* 74.), and formed of bar iron, in a curve approaching the catenary, and supporting the bridge upon stiff bars. These bridges reminded me of some constructed on a sort of converse principle, by Mr. Leather of Leeds; which are described and figured in the *Companion to the British Almanack*, 1833, p. 222—224., and *fig.* 75., wherein the system of suspension is an arch of cast iron, thrown across above the bridge.



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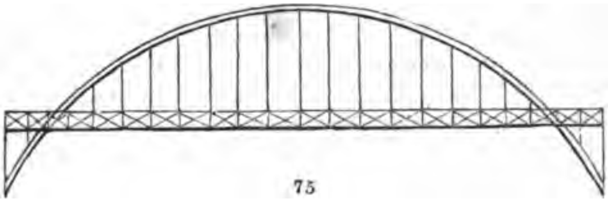
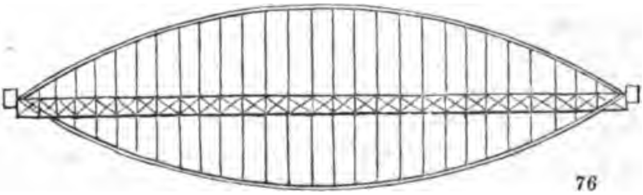


75

A combination of the two immediately suggested itself, as probably applicable in some cases, where good holding or abutment may be difficult to obtain. A suspension bridge is rarely erected, unless on a very small scale, with less than four catenaries, two on each side; and if, instead of such two catenaries (or arches), we employ one of each, locked together at the ends (*fig.* 76.), the catenary will form an abutment for the arch, and the arch a stay, or anchorage, for the catenary: as it is evident that the weight, or pressure, which tends to expand the one, will also tend to collapse the other; thus establishing mutual compensation. Such a bridge would, therefore, stand without lateral support, upon any basis firm enough to bear its vertical pressure.



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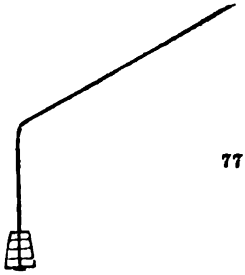
So many suspension piers and bridges have given way, by undulations, oscillations, sudden local strains, or other causes, that room appears, if not for improvement in the general principles, at least for local and circumstantial adaptations. Even the magnificent bridge at Freybourg, has been rumoured to discontinue the passage of heavy waggons, in consequence of symptoms of yielding having been perceived in the soft sandstone, at the bend of the stay, after entering the ground (see *fig.* 77.); a principle of anchorage which I understand to be common in suspension bridges of French construction. I was at Freybourg in September last; and, although certainly no prohibition reached my ear respecting the carriages permitted to traverse the bridge, yet, as there seems no reason for raising such a report without any foundation, some fretting has probably been perceived, sufficient to awaken, at least, caution. Such are the reasons that lead me, not a practical man, to trouble you with this communication; which, leaving details, with their numerous variations, to be supplied on the occasion, I may conclude with a few suggestions, generally applicable to bridges upon this construction.



77

1. The curve and arch should be so proportioned as pretty nearly to compensate the different rates of expansion of cast and wrought iron; by which the roadway would always preserve pretty nearly its level; the expansion of the vertical rods, here, counteracting that of the main supports.

2. The rigidity of the arches would prevent any considerable undulation, and would require some corresponding stiffness in the catenary; as, if that were to bend much in the passing of a heavy load, too much strain would fall on the arch. To produce such stiffness, where the length is too great for single bars, the joints should be made not to coincide; the pivots should be set vertically, and bolted to the bars they intercept; and the bars arranged beneath each other, instead of laterally. This stiffness would be a further preventive against undulation; and be increased, if needful, by diagonal connexions amongst the bars, either by varying the direction of the pivots, or otherwise.

3. The supports beneath, where of any considerable length, should be of cast-iron tube, to give stiffness; and there should be occasional connexions, by St. Andrew's crosses, also of cast-iron tube, between those of the opposite side and the bearing-beams of the bridge. This would give steadiness, and prevent much horizontal oscillation; which would be further obviated by setting the supporting arches and catenaries wider apart at the ends

than the breadth of the roadway, as is done at Freybourg, with full effect.

4. It is in soft banks, and on successive piers in wide sandy water-beds, that this construction occurs to me as chiefly applicable; and in lengths of suspension not exceeding 250 ft., until experience may have shown that an upright supporter, as above described, may be trusted above 16 ft. long, without undue weight and expense of iron.

Plymouth, Jan. 6. 1837.

ART. VII. *Description of an easy Method of whitewashing or colouring the Fronts of large Buildings, in use on the Continent.* By JOHN ISAAC HAWKINS.

I HAVE often admired, in Belgium, Holland, and Germany, the convenient method which is employed in these countries for reaching every part of the front or side of a very high house, for whitewashing or colouring it, by one long ladder.

I have for years past mentioned the plan to several architects and builders in London, who have expressed their approbation; but I have not yet heard of its being put into practice in this country.

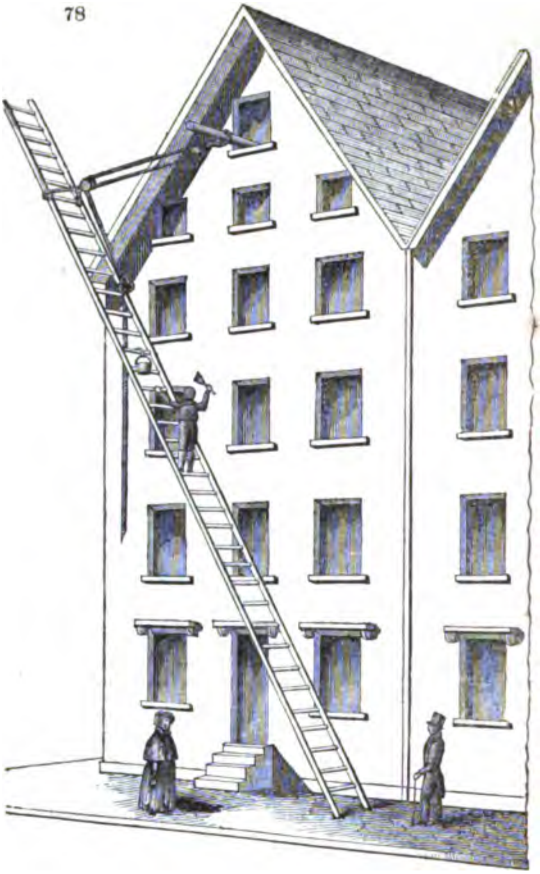
Being strongly impressed with the importance of the method employed, both in an economical and a humane point of view, I send you a sketch, whence may be seen, at a glance, the facility with which a man can command the greater part of the front of a house, at one station of the ladder, without having to go down. He is never tempted to reach to a dangerous distance, as he is apt to do when the ladder leans against the house, to save himself the labour of going down to remove the ladder to a new station, or to exchange it for a longer or a shorter one.

It is obvious, from the sketch *fig.* 78., that the plane of the ladder is, in all positions, at right angles to the plane of the house. To effect which, the end of a long pole is projected 4 or 5 feet from the highest window, the inner end being firmly secured to the floor, or braced down from the ceiling.

A pair of pulley-blocks, with a long fall-rope, are tied to the pole, and to the ladder, near the upper end, so that the side of the latter shall be, in all parts and positions, about 3 ft. from the surface to be whitewashed or coloured; and the fall of the rope is made fast to the ladder, as shown in the sketch.

3 ft. being about the length of a man's arm and a hand-brush together, he will conveniently reach the wall, without leaning from his perpendicular standing on the ladder.

78



Under this arrangement, the man, while on the ladder, can pull it up, or let it down, at pleasure; and thus he has command of the greater part of the front or side of the house from one station of the ladder; and, by moving the foot of the ladder once or twice, he may reach at ease the whole surface.

A single man can raise such a ladder, 50 ft. long, without an assistant, and place it in all the positions necessary for him to whitewash or colour, with an ordinary hand brush, the whole front of the highest house; and such whitewashing or colouring will have a more uniform appearance than when performed by the English method, with long and short ladders, long and short handles to the brushes, to work at the various distances, which, notwithstanding the very numerous shiftings of the ladder, have necessarily to be reached. Hence a mottled appearance is so often seen; for uniformity of laying on the wash is not practicable, while the short-handled brush is used at nearly right-angles to the wall, with the man's arm in the position of the greatest strength; and while the long-handled brush is employed at arm's length, in a very acute angle, and can be pressed against the wall only by strength of wrist.

I offer these remarks, in the hope that this notice may induce some, who are not afraid of going out of the beaten track, to adopt so valuable a mode of proceeding.

May 2. 1836.

Art. VIII. *Calculation of the Prime Cost Price of a Rod of Brickwork for a Railway Bridge in Kent.* By W. S., Surveyor.

	£	s.	d.
4200 stock bricks to a rod of work, at 31*s.* per thousand	6	10	2
24 bushels of chalk lime, at 6*d.* per bushel	0	12	0
3 single loads of sand or road drift, at 2*s.* 6*d.* per load	0	7	6
Labour	1	13	0
Allowance for use of scaffolding	0	2	0
Total prime cost	£9	4	8

The first price is made out in this way: — Supposing that four fifths of the bricks to be used are common sound stocks, at 30*s.* per thousand, and one fifth picked stocks, of an even colour, for the facings (which is a liberal allowance), at 35*s.* per thousand, including, in both cases, carriage.

	£	s.	d.
Four fifths at 30*s.*	1	4	0
One fifth at 35*s.*	0	7	0
	£1	11	0 per thousand.

In this calculation, I have assumed 4200 bricks to the rod; but the usual number in the average of works is about 4350. I think the former number, in this case, sufficient, as the piers, &c., are very massive, and so much waste does not take place in cutting to form the bond, &c., as in thinner walls.

The price of labour is calculated on the supposition that a man, with the assistance of a labourer, on an average, can lay 700 bricks per day.

$$4200 \div 6 = 700$$

On such works as railway bridges there are generally employed two classes of bricklayers; the most experienced man taking the facing and making the work, and the inferior workman the filling in.

	£	s.	d.
6 days, at 3*s*. 6*d*. per day, being the average price of the two classes of bricklayers; the best class having 4*s*. per day, and the other class 3*s*. - -	1	1	0
Labourer, 6 days, at 2*s*. per day - - - - - -	0	12	0
Total estimate of labour -	£1	13	0

The last item is a liberal allowance, because, where there are a number of men employed on works of this kind, the proportion of one labourer to every bricklayer is greater than is required, and, in many cases, machinery may be used to more advantage.

A bricklayer, with the assistance of a labourer, can lay 600 bricks per day, but here the filling in may be done at a quicker rate; I have taken 700; some men will lay from 900 to 1000 per day.

In London, the price of a rod of common work is from 36*s*. to 38*s*., for all labour and use of scaffolding.

The work at Cloudesley Square Chapel was taken at 42*s*., including the facings and cuttings to the splays and Gothic arches.

For the use of scaffolding, I have only allowed 2*s*. per rod, as not so much will be required as in houses, &c., in proportion to the number of rods of work.

The above calculations are made, presuming that the contractor would find enough clay in the cuttings for the bricks, and would consequently make them himself.

The following is the prime cost price of making bricks in Kent, without the addition of interest for the wear, tear, and cost of tools, expense of kiln, keep of mill-horse, &c.

	£	s.	d.	
Digging clay, attending mill, making bricks, attending kiln, stacking and *all other labour*, ready for delivery - - -	0	10	0	per thousand
2000 faggots, at 3*s*. 6*d*. per thousand -	0	7	0	
Carriage of ditto - - - - -	0	2	0	
	£0	19	0	

In burning bricks in a kiln, a great quantity of chalk may be burned at the same time, without increasing the expense.

Tunbridge, December, 1836.

REVIEWS.

Art. I. *Temples, Ancient and Modern; or, Notes on Church Architecture.* By William Bardwell, Architect. 8vo, 234 pages, Plates.

In the Preface, the author states his object to be, "to excite among architects a spirit of enquiry, such as cannot fail to prevent a repetition of those improprieties, the existence of which in our public edifices has so long afforded subject for complaints, and matter for criticism."

"I would put an end to that inconsistency which is the cause of error; the tyranny of custom, and the caprice of fashion; which, while they compel the modern architect to copy *in little*, and with meaner materials, the sublime works of revered antiquity, indulge a laugh at his expense, because his reproduction fails to excite those sensations of pleasure and admiration which are inseparable from the contemplation of the original. The architects of our modern churches are, in general, induced to adopt the pointed style of architecture; while the material in which they are compelled to work was wholly rejected by their great predecessors in the middle ages. The pointed style of architecture, its character, its beauties, and even its faults, are essentially those of construction in stone: had that substance been wanting, the style would not have existed; and a candid consideration of the criticisms I have collected will, I think, make it clear that the chief defects of modern imitation arise, not so much from a want of acquaintance with the style, as from the necessity of adapting it to the littleness and poverty of a brick construction. In all the great examples of the middle ages, stone alone is used: had brick been adopted, we have every reason to believe that the artists of those days would have adapted their style to its peculiarities, as they did to those of stone. The royal robes of a monarch are grand and dignified, when purple and fine linen are their fabric; but let their form be imitated in paper and tinsel, and they excite only contempt and derision. The effect of a building owes much more to its material than is generally imagined: but this is too often overlooked, or mistakingly regarded as a matter of indifference, while the style engrosses the deeper attention of the architect. The superiority of the city churches over those recently erected is attributable mainly to the component substances of which they are constructed; and, as one result of my investigation, I may observe, in connexion with these edifices, that, notwithstanding his errors of detail, the general style and the materials of Sir Christopher Wren are almost the perfection of Protestant church building.

"If, then, we be too poor to afford erections of stone, is it necessary, is it fitting, that we should continue to caricature the sublime conceptions of our ancient ecclesiastical architects, by imitating their works in a material which they rejected as unworthy to embody them? Let us, till better days arrive, till the public mind is more enlightened, and the public eye more instructed, practise in the Italian style, in which buildings may be constructed of almost any material, and which, with the strictest propriety, will bear the utmost extent of enrichment, and will preserve all the *pittoresco* of the Gothic, even when executed with a Quaker-like plainness. The great advantage, therefore, of this style is, that, small as may be the sum appropriated, a church may be erected for that sum; which, while it humbly answers the purposes of the building, may also do honour to the architect. But to compose the Italian style will certainly require a knowledge of the principles of design, in order to effect anything like a harmonious arrangement; and it would put a stop to the practice of going to Stuart's *Athens* for a portico, and applying it, no matter how, and no matter where; a practice in reference to which the late Sir John Soane observed to me, some years since, ' My footman is as good an architect as I am.'

" In order to point out the principles on which is founded a just and correct taste in church architecture, I have thought it right to trace them as they rise, in a historical examination of the temples of all ages and countries. It is by such an examination only that we can discover the general principles of architectural composition, on which the effect of those buildings depends.

" If it be thought that I have in some instances recommended a style and class of edifices too expensive for our age, let the utilitarian be reminded that money expended in public buildings is not an outlay on the part of a country, but a most useful and economical application of the national resources. Some conception may be formed of the vast sums expended on the embellishments of ancient Athens, under the suggestion of that true political economist, the illustrious Pericles, when it is stated, that the cost of the Parthenon alone is computed at a hundred talents of gold; although, from the multitude of slaves, manual labour was at a low price, and the materials were the produce of the country.

" Attica was not impoverished by these sacrifices; nor would England, if a part of her enormous capital were similarly employed. The lowest class of the people would benefit directly by the sweet rewards of labour; and the splendour of her works of art would make the poorest son of the soil proud of the country they adorned.

" The early chapters of this work were written, as the reader will readily perceive from the tone and matter, before the Chancellor of the Exchequer had explained to Parliament the ministerial measure on the subject of church rates. No allusion, therefore, to that measure could have been intended by the author: with him the question was between church rates and no provision for the church." (p. xii.)

From this last passage, respecting church rates and no provision for the church, we were prepared in some measure for political and religious discussion; though it was not till after glancing over the whole of the volume, that we arrived at the conclusion that a considerable part of it cannot be considered as architectural. In proof of what we assert, we give the following quotation from Chap. II.: —

" Attacks have, from time to time, been made upon the established church of this country, and upon the religion of which it is the guardian, as an easy and safe mode of obtaining political notoriety; for, invented or exaggerated statements against the lives of the clergy, their wealth, their pride, or their indolence, are always eagerly received by a greedy and eager populace; and, strange to say, their author is lauded to the skies as a patriot.

" These attacks are so diversified in their origin, and so hollow in themselves, that I will not fatigue the reader with an attempt to enumerate or classify them. The source from which the church derives its property is constantly misstated, the amount of that property grossly exaggerated, and a new application often urged, under the specious pretext of popular relief. Thus, for instance, it is sometimes stated that church property was given, or bequeathed, for the sake of procuring masses for the souls of the donors. This is a great mistake: the lands left for that purpose were the Chantry lands, none of which are now in the hands of the church: one of the first acts of Edward the Sixth's reign was to impropriate them to the crown. But the delusion about the wealth of the church is fast passing away; the late Parliamentary returns, and the writings of many able men who have examined the subject, have, in some degree, opened the eyes of the people to the deceptions of their misleaders; and that man must be besotted and ignorant indeed who now believes that the church of England is a wealthy establishment; and that our present estimable primate has fifty thousand pounds a year, or even a third part of that sum.

"I shall show in the succeeding chapter some of the uses to which the wealthier clergy have applied the means of doing good committed to their hands; and the public evil that will follow the efforts of innovators to remove them, or restrain their exertions, by limiting their incomes. The Tithe Commutation Bill of last session has, at least for the moment, silenced the unreasonable cry for the abolition of tithes; but, should it be renewed, it will be well to remember, that a simple repeal of tithes would only be a simple addition to the rental of the landlords; and what benefit would result to the people from a mere robbery of themselves? The landed proprietors should also recollect, that, if once they sanction the principle of interference with the most ancient title to property in the realm, they, in fact, acknowledge that rights and titles are dependent upon the public will; therefore, the legal owners may be stripped of them whenever public clamour requires it." (p. 16.)

"Nothing can be more dishonest than the conduct of those persons who refuse to pay church rates; a tax to which their property has been subjected for many hundred years before they or their fathers became possessed of it, and on account of which they obtained that property at so much the less cost, because it was charged with the duty of keeping up the parochial edifice: but this duty they are now endeavouring to transfer to other property, which has never borne it; for, in spite of infidelity, the churches must be kept up. In short, it is a mere question of property, and not of person; and a man may just as reasonably refuse to pay the interest money upon a mortgage over his estate, or the King's taxes, or any other burden upon property, as the church rates, upon the specious pretext of its being against his principles." (p. 19.)

"Had we a property tax as the ancient Egyptians had, we might expect to rival their wonderful monuments, and see our country become its wealth, the product of its never-tiring industry would not then evaporate in foreign loans and absenteeism." (p. 202.) "We are the most hard-working people upon the face of the earth; and yet thousands of our poor are in want of the necessaries of life, — How is this? What becomes of the product of this immense exertion? It does not circulate here, or the result would be different. It goes out of the kingdom, and enriches other nations: and, were a tax imposed upon absentees to the amount of 50 per cent, that would not be an equivalent for the loss of the other 50." (p. 203.)

The work abounds in similar passages, and in others still more political; but there is intermixed with these a variety of curious and useful matter, and the work is illustrated with beautiful engravings, some of which, however, have already appeared in the *Graphic Illustrator*, and in other works.

ART. II. *Observations on the Architecture of England during the Reigns of Queen Elizabeth and King James I.* By C. J. Richardson, Architect. The Sixth and concluding Part. 4to, plates.

THE wrapper of this work states it to be the sixth and concluding part, while the letterpress contains Chap. I. p. 1., and is continued to p. 32. Be that as it may, it contains seven beautifully lithographed plates of Claverton, in Somersetshrie, and the Duke's House at Bradford, in Wiltshire. The latter is a splendid specimen of the Elizabethan architecture; and, judging from the exterior, we should prefer it to anything of the kind which we have seen. The house at Bradford belonged to the Duke of Kingston, and is supposed to have been built from the designs of John of Padua. Aubrey describes it as "the best house for the quality of a gentleman in Wiltshire. It is the best sort of architecture of King James I.'s time. It is built entirely of freestone, full of windows, and has two wings; two, if not three, elevations or ascents to it, which are adorned with terraces, having either rails or stone balustrades. The house is now occupied as a farm-house." (p. 21.)

Art. III. *Plans and Elevations of the proposed Restorations and Additions to the Cathedral of Glasgow.* With an explanatory Address by the Local Committee. Imperial folio, plates.

The object of this work is to show how much the Cathedral of Glasgow would be improved in appearance by a new western front, and a new south transept. This is exhibited in some splendid lithographic plates, which have been prepared at the expense of a local committee, with the greatest care, by a professional gentleman of eminence and experience in Gothic architecture. The general character of the additions is, as respects splendour and architectural details, in strict character with the finest parts of the ancient building; all the mouldings and other ornaments being taken from those exhibited in the choir and nave. We cannot but most ardently desire that so public-spirited an undertaking may be crowned with success; not only for the sake of our native city of Glasgow, but on account of setting an example which, we trust, will be followed by other towns of Scotland, where the hands of our barbarian ancestors dilapidated so many fine ecclesiastical edifices.

Art. IV. *The Cabinet-maker's Sketch-Book of plain and useful Designs.* Vol. II. *consisting of Cabinet-work generally.* By T. King. 4to, containing 36 plates, and 92 designs. London, 1836.

We expressed our favourable opinion of the first volume of this work in Vol. II. p. 512.; we may observe, generally, that this volume rather excels, than falls short, of the former one. We shall copy a few of the designs from it, which we consider as good; and some portions of others, to exhibit what we consider defects or faults, though these are not numerous. Not a few of the designs resemble those published in our *Encyclopædia of Cottage and Villa Architecture and Furniture;* the reason, doubtless, being, that both have been obtained from the same source; viz. the portfolios or warehouses of the principal London manufacturers.

The support to the card-table (*fig.* 79.), taken from Mr. King's plate 25., strikes us as having a good effect, from the concave curve at *a*, as contrasted with the convex curve at *b*. The scroll foot, as exhibited at *c*, is rather plain; and would be improved, as it appears to us, by some such addition as we have shown at *d*.

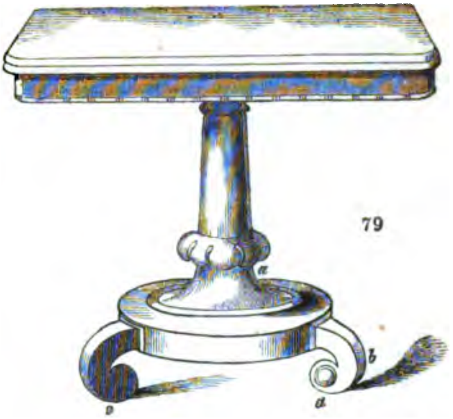
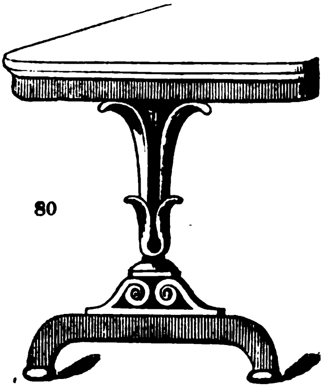

79

Fig. 80. (from plate 26.) is a portion of what is called an occasional table, in which the supports are made in the form of a flower. This, we are decidedly of opinion, is in bad taste; because it is not in analogy with what takes place in nature. Flowers are exceedingly good ornaments to supports, as they are also to the capitals of columns; but it is repugnant to correct feeling and reasoning to employ them as principals. See what we have said on the subject of ornament relatively to use, in Vol. III. p. 311.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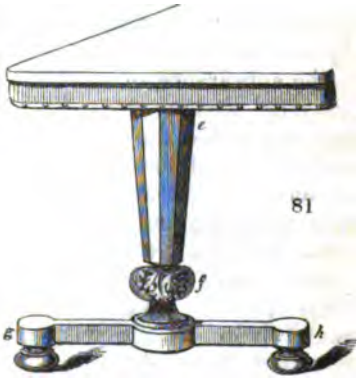
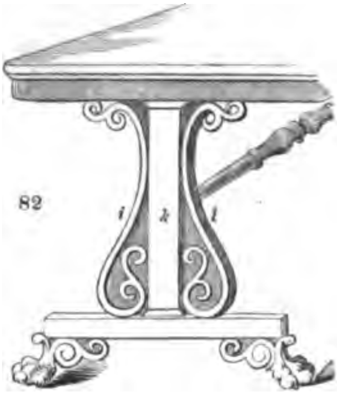

81

Fig. 81. (taken from plate 26.) is objectionable, on account of the bad finish which the polygonal leg makes at *e*. The neck at *f* is, perhaps, rather too small for that leg; but the lower part of the foot, from *g* to *h*, appears to us good. A polygonal or round finish to the top of a support to a table is allowable,



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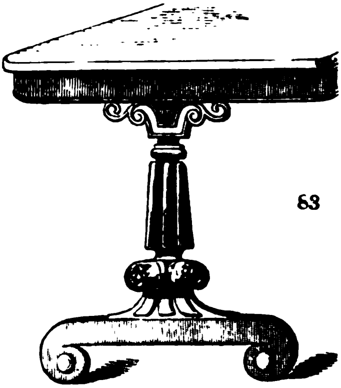
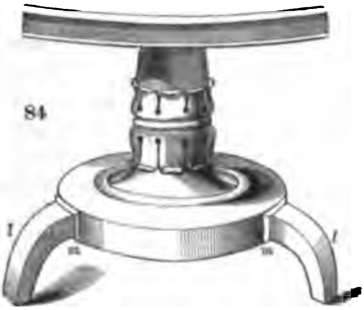


83

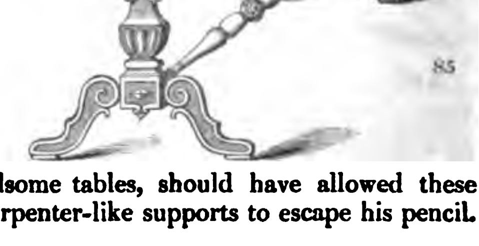
where that support is placed in the centre; but not, as we think, where that support is placed at the side or ends, as in *fig.* 81.



84

Figs. 82. and 83. (also taken from plate 26.), and more particularly the latter, appear to us very good. The columnal support of *fig.* 83. finishes well, both at bottom and top; and, in *fig.* 82., the scroll ornaments (*i i*) are very legitimately employed to decorate the pillar (*k*).

Four designs for loo tables are given in plates 27. and 28. Three of them are very handsome; but one of them (*fig.* 84., from plate 28.) is altogether objectionable, on account of the abrupt nakedness, and want of the appearance of cultivated design or high art, in the supports (*l l*), which have farther the appearance of being only glued on, and held in their places by the fillets (*m m*). We cannot help feeling surprised that the party who designed the upper part of this table, and of the other three very handsome tables, should have allowed these naked and common carpenter-like supports to escape his pencil.



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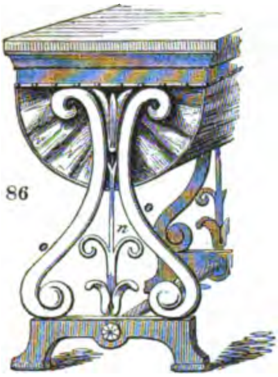
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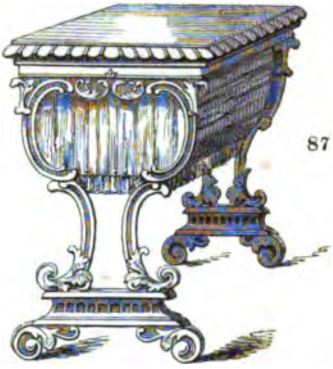
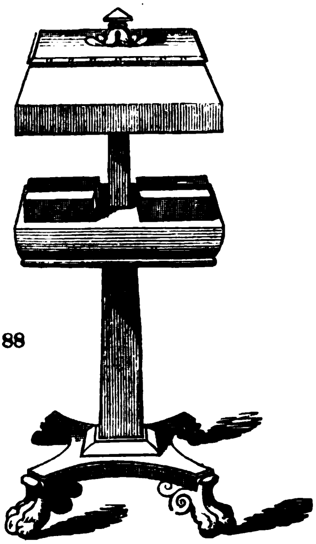

87

Fig. 85. (from plate 29.) is an "occasional table," in the Elizabethan style, very handsome, and highly expressive of the most cultivated variety of that manner of design.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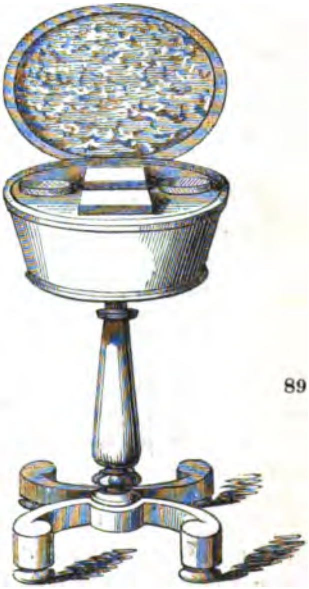
89

There are three other very elegant designs for tables in the same plate, and four beautiful ones in the succeeding one; but the Gothic feet of one design in plate 39., and another in plate 31., have too much undulation in their outline, and are, consequently, without spirit: they are also much too plain for the superstructure.

In the work-table, of which *fig.* 86. (from Mr. Kir

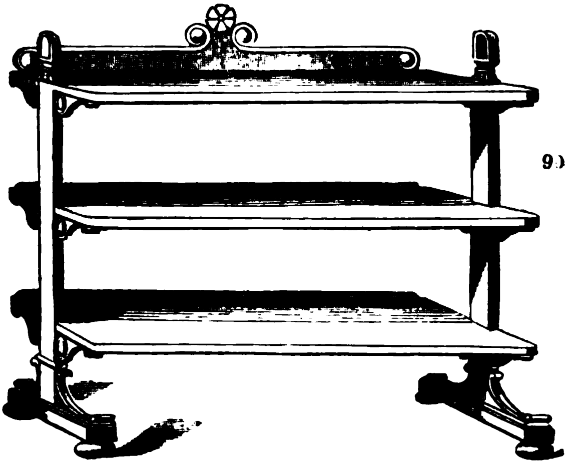

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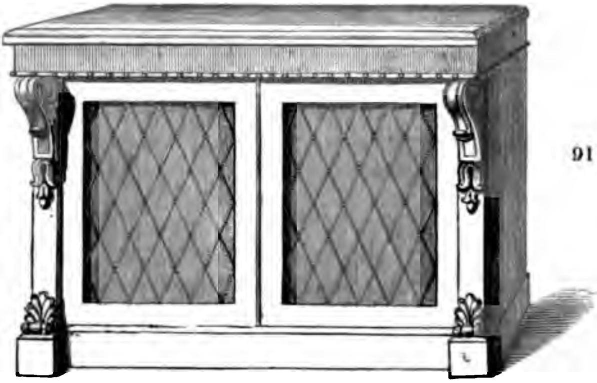
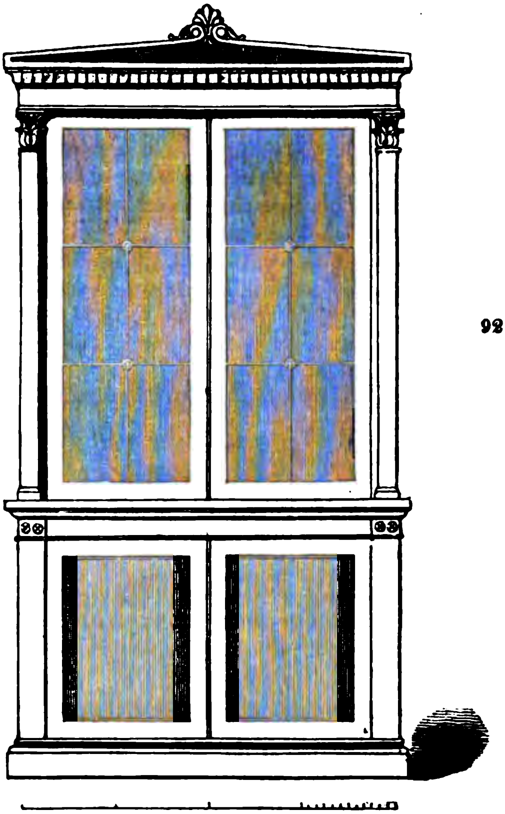
plate 32.) is a portion, it is unsatisfactory to see an ornament (*n*) placed in the position generally occupied by the principal supports; while the principal supports (*o o*) occupy the place of what are usually ornaments. Of course, the principle of actual strength has very little to do with the expression of strength in instances of this kind; as becomes evident by inspecting *fig.* 87., a work-table in the style of Louis XIV., in which the principal supports are in the form of ornaments; but then there is nothing in the design which creates an allusion to a stronger mode of support to contrast with them.



91

Figs. 88. and 89. (from plate 33.) are poys, or supported tea-chests; both handsome.

Plate 34. exhibits five beautiful fire-screens, with which we have not a single fault to find; and we may make the same observation with respect to the screens in plate 35., and the flower-stands and Devonports in plate 36.



92

Plates 37. to 41. exhibit handsome sideboards, in different styles of design; and plate 42. shows two dinner waggons. The castors in *fig.* 90. (taken from Mr. King's plate 42.) are concealed in the balls which support the feet: but they are, or ought to be, such as to admit of readily rolling the waggon backwards and forwards, when it is loaded with glasses, decanters, plates, knives, and other articles required for the dining-table.

Plates 43. to 47. are sideboards; and plate 48. contains side-tables. Other plates, filled with commodes and pier slabs, carry us on to plate 55., which contains a handsome design for a bookcase, as do plates 56. and 57. respectively. Plate 58. exhibits two commodes; plate 59., an open bookcase; and plate 60., a wardrobe. We select *fig.* 91. (from plate 54.) as a handsome architectural commode, and *fig.* 92. (from plate 55.) as an architectural bookcase.

On the whole, there are many elegant and useful designs in this work, and we can strongly recommend it to the cabinet-maker and upholsterer. It contains no letterpress whatever, except a table of contents.

ART. V. *A Series of Plans for Labourers' Cottages, and other Habitations, constructed upon Economical Principles, and adapted to Town and Country Dwellings; engraved on Thirty Plates: with an Introduction, containing many useful Observations on this Class of Building, tending to the Comfort of the Poor, and the Advantage of the Builder; with Calculations of Expenses.* By the late Mr. Wood of Bath, Architect. A new Edition, corrected to the present time. Folio.

This is a reprint of a work which was originally published in 1781, and which at that time did an immense deal of good. Though the estimates which it contains are not exactly suited to the present time, yet that is a matter of comparatively trifling consequence, because the quantities are given; and to these any carpenter or builder can affix the prices in the locality in which he resides. The work, we have no doubt, will be acceptable to many country builders and landed gentlemen.

MISCELLANEOUS INTELLIGENCE.

Art. I. *Domestic Notices.*

ENGLAND.

The National Gallery. — As for the National Gallery, "the voice of artists, amateurs, and the public at large, speaks, we believe, but one opinion; we, at least, have never heard a single word uttered in favour of the building, either *per se*, or considered with reference to the magnificent position which it has been allowed to occupy." (*Quarterly Review*, No. 115. p. 79.) Mr. Wilkins is the author of many designs which command general approbation; but certainly he has been most unfortunate in the case of the National Gallery. There is a want of magnitude, which is one of the first elements of architectural beauty; next, there is a want of height; and, thirdly, there is a want of simplicity in the disposition of the general masses. An obvious improvement to the elevation, bad as it is, would be the removal of the cupolas at the two extrimeties of the building, and the removal of the two columns with their architraves, projected in the front of each of the two archways. The width of bearing of the architraves in the case of these last columns, as compared with the width of the bearing of the columns of the portico, is revolting to the sense of fitness; and independently altogether of considerations of this kind, these projections are objectionable as destroying the simplicity of the elevation, and consequently distracting the eye. A similar result is produced by the cupolas at the two extremities. In our opinion there is not a single point in this building which is even tolerable, excepting the portico. — *Cond.*

The Chapel Royal of King Henry VIII. *at St. James's Palace.* — This ancient place of worship, the first royal chapel in which the Protestant, or reformed doctrine of the Christian faith was preached before an English monarch, has been for some time undergoing a complete architectural alteration, if not a reformation, under the auspices of the Commissioners of Woods and Works, but directed by Sir Robert Smirke, R.A. The chapel is not large, being scarcely 30 ft. wide, by less than 50 ft. in length, and not more than 30 ft. to the ceiling. It was the original chapel of the Hospital of St. James; many other parts of which still remain engrafted with the less ancient works and modern additions of the palace. When Henry VIII. took possession of this institution, he had the chapel fitted up for his own use, and engaged Hans Holbein to paint the ceiling, which is in the most elegant taste of that day, each compartment having its peculiar armorial bearing, symbol, or allegorical device. Two of the divisions are remarkable for having the armorial bearings of two of the "tenacious disputant" queens, quartered with the arms of England These are towards the north-west corner of the ceiling, nearly over the altar:

the first is that of Anne of Cleves; the other, of Anna Bullein, or Boleyn: but neither Catherine of Arragon, Jane Seymour, Catherine Howard, or Catherine Parr, are noticed in any way in the building. The ceiling was completed in 1540, as we see by that date being repeated in several of the smaller compartments of the original work. Part of this ceiling having been destroyed or greatly injured, it was requisite to renew it in the exact taste of the original; and for this purpose Mr. C. J. Richardson was engaged to make the drawings and superintend the painting. The object appears to have been completely attained, as the new portion of the ceiling harmonises in style and colouring with the ancient part: but the tone is less sombre, because the work is new; yet a year or two will lower it sufficiently. Their Majesties' seat is at the southern end, exactly opposite to that in which is the communion table. On the right is the pew for the choristers; on the left, exactly opposite the latter, is the organ: there are no other gallery seats. The pews below are about twelve in number, and may hold about seventy persons. These pews are nicely carved in oak, in a suitable taste; but we cannot say so much for the cornice, which, instead of uniting the rich ceiling to the side walls, cuts off all union of style or taste between them; and so far there is a great want of harmony of parts; but, as the work is not finished, we hope this may still be remedied. The rich ceiling and bare walls can never be intended to remain in that discordant state; and some stained glass is required in the windows. (*Morning Herald*, April 21. 1837.)

CHESHIRE. — *Birkenhead.* Designs for a new church, to be built here, have been advertised for. It is to contain 800 at first, and to be capable of enlargement. — *J. K.*

Blackburne. — A church is about to be erected at Accrington, near this town, from designs, we are informed, prepared by Messrs. Williams and Edwards of Liverpool. — *Id.*

Chester. — The committee of the Mechanics' Institution have requested the city council to allow the use of the water tower. It is intended to have it put into thorough repair, which will cost about 220*l.*, and to fit it up as a museum of antiquities, and natural history. — *Id.*

Dutton. — *The Grand Junction Railway Viaduct.* This gigantic structure, across the valley of the Weaver, near this place, which is now near its completion, exceeds in magnitude anything of the kind yet accomplished in this country, or perhaps in Europe; not even excepting the splendid bridge over the Menai Straits. The viaduct is in the Gothic style, formed of red stone, procured from the neighbourhood of Bolton and Runcorn: it consists of 20 arches of 60 ft. span, and 60 ft. in height; and the battlements, when finished, will add 12 ft. more to the height: the whole length is 1400 ft. 700,000 square (? cubic) feet of stone have been used in its construction; and it will be completed in less than eighteen months from its commencement, and at an expense of 50,000*l.*, being considerably under the estimate. (*Liverpool Mercury*, Jan. 6.)

ESSEX. — A chaste and elegant chapel has lately been built on an eminence which commands a very fine view, called Buckhurst Hill, in the parish of Chigwell, near Epping. — *Frederick Lush. April*, 1837.

Haggerstone Church. — Originally the pulpit stood almost in a corner, against the front of the gallery; but now it has been removed, and placed midway between the two galleries; by which alteration the appearance of the interior is improved, and the voice of the preacher is the better heard by the congregation. — *Id.*

LANCASHIRE. — *Liverpool.* In Vol. III. p. 582., one of your correspondents, who signs himself W., informs your readers that the new Entrance to the Railway is nearly completed, and is a "chaste and elegant structure, in the Roman or Italian style." I had previously supposed the latter style was much more modern than, instead of being synonymous with, the Roman; that it succeeded the pointed; and that it was the same as that frequently called, after its first cultivator, Palladian: but let that pass, as well as the suitableness of the Roman Corinthian style for a railway entrance. In this "chaste and elegant structure," where the line of front is broken by projections, columns, all of which in this building are engaged, are placed, round each of which the entablature returns on every side. The leaves in the caps appear as if they had been scraped, not cut, out of the stone; and look very tame. The shafts are worked plain. It is said that Mr. Weightman, who was Mr. Foster's managing clerk, perpetrated this design.

In his admiration for the design of the exterior, W. seems to have overlooked the magnificent shed in the yard, which is decidedly the best specimen of carpentry in this town.

W. also considers the Medical Institution (see fig. 71. p. 383.) as "chaste" in its design. In order to afford your readers an opportunity of judging of his correct taste in this particular, I would mention that in the Ionic columns the ovolo of the caps is worked plain, and not cut into eggs and tongues. The proportions of the building I do not like; as the centre, a recessed hexastyle portico, is about twice the width of the wings; which latter look very heavy, though considerably relieved by pannels.

In the new Custom-House, where the shafts are plain, the bases are eeded. The pilasters, about 4 ft. in diameter, project only 3 in., and are therefore invisible from a point where the whole building can be seen. The porticoes are about 50 ft. long, 30 ft. high, and project 9 ft. (These dimensions are not given from actual measurement.) The masonry is very bad. Each column is in about eight pieces; and the joints are so bad, that a crown piece may be inserted between them. The ashlar-work is in many places quite green.

In the Ionic portico of the Mechanics' Institution, now being erected under Mr. Picton's superintendence, from a design by Mr. A. H. Holme, the eyes of the volutes are worked flat, the shafts of the columns plain, and the bases reeded. W. says this building is expected to be finished in January. One of the committee, who takes a great interest in the affairs of the Institution, says it is not expected to be finished before July. I do not myself think it will be completed before May. The lecture room is intended to accommodate about 1200.

It is said that Mr. Jevons, having failed in establishing a joint-stock company for that purpose, intends building an arcade of shops, which, when completed, will much exceed in size the Burlington Arcade, London.

A joint-stock company is being formed here, for the purpose of building a music hall: nearly five hundred shares, of 25*l.* each, have been taken up.

Our common council intend applying for an act of Parliament, to enable them to erect a shire hall, to stand nearly opposite to that "chaste and elegant structure," the Railway Entrance.

Messrs. Cunningham and Holme are engaged in superintending the erection of a church, in the Norman style, at Aigworth. This is the only building in this style in this neighbourhood. An elegant church, at Knotty Ash, near this town, was completed about six months ago. It is in the perpendicular style, and was designed by Messrs. Williams and Edwards. For a building in the pointed style, the windows are not sufficiently embayed; and the shafts being sanded, present a striking contrast with the arches of the roof, which are of a pure white. Taken as a whole, it is, however, far superior to the generality of Liverpool buildings. The Marquess of Westminster is about to erect a lodge at Eaton Hall, near Chester. It is to be built of Bath stone, and is expected to cost about 20,000*l.*— *K. C. Dec.* 17. 1836.

St. George's Hall is a new building for oratorios, &c., for which about 25,000*l.* worth of shares have been subscribed. The Fish Hall is a building on the site of Sion Chapel, Murray Street, for the Liverpool Fish Company's sales, which is being erected from the designs and under the superintendence of Mr. Rampling. The south front will be of stone, and will have, apparently, a portico of unfluted Doric columns in antæ. A very neat stone-fronted building, with a chaste Doric portico, is just completed for the Royal Institution Schools, from a design by your correspondent, Mr. Picton; and a Marine Observatory, in a convenient situation in the port, is about to be erected.— *Id. Jan.* 6. 1837.

NORTHUMBERLAND. — *Improvement of the River Tyne.* Engineers and others have often suggested plans for widening the harbour, that a greater quantity of the tidal water might be let in from the river Tyne. Mr. Cubitt has made an actual survey of the river, to propose such means as he deems best to carry it into effect; and has also had a dredging machine constructed for this purpose. — *F. Lush. London, April,* 1837.

SCOTLAND.

A new Glasgow Water Company has been projected, for supplying that city with water, upon the ancient principle of gravitation, in contradistinction to the ordinary one by pressure. The scheme has been devised, and the plan matured, by that singularly ingenious man, Robert Thom, Esq., of Ascog; and it has been reported on by John Thom, his brother, civil engineer at Greenock. A printed prospectus, of great length, may be obtained on application to David Murray, Esq., Secretary, 28. Miller Street, Glasgow.

ART. II. *Retrospective Criticism.*

SEPARATE Exhibitions of Architectural Designs. — I think the suggestion of Candidus in p. 301., recommending an exhibition of architectural designs, &c., under the *surveillance* of the Institute, of the greatest importance. It would not only be a very considerable means of acquiring knowledge to all, but would give unsuccessful architects, and the public, an opportunity of testing the capability, or impartiality, of committees in competition affairs; as there would be little expense in sending all returned designs to the exhibition. It would likewise prove a great encouragement to young architects, even though the prize were praise alone; particularly if it were on a plan to allow of the admission of a series of comparative designs.— *Cid. Birmingham, July* 1. 1837.

Winkle's Cathedrals (Vol. II. p. 184.). — I have not observed any notice of Winkle's *Cathedrals* in your valuable Magazine, since your first review of the work in Vol. II. p. 184. I have just got the last number (30.), *Illustrations of the Cathedral Church of Norwich*, containing what are called *three highly finished engravings on steel.* I should like to know what is meant by highly finished engravings. Surely, not the loose scratches bound up in this number, which are anything but highly finished. In addition to the bad drawing, they are so undecided and indistinct, that I very much doubt if the places would be recognised from these feeble representations. If one or two plates of the work had been bad, we might not have minded it so much; but the recent numbers have been going on from bad to worse. Surely, this is not judicious: if the work does not pay, it would be better to give it up, or raise the price, than impose such rubbish on the subscribers. I subscribed to the work from the commencement, and shall continue to the close, because I dislike a few numbers only; but the shilling a number is a shilling too dear when we cannot look upon the work with satisfaction. These plates are no recommendation to the other works of the same artists; and they have certainly kept me from subscribing to the *Foreign Cathedrals*, and, I should think, others, from the same cause. — *B.*

Bland's Experimental Essays.—I have been exceedingly gratified with Mr. Bland's "Experimental Essays on the Principles of Arches, Piers, Buttresses," &c. The subject is treated in a manner so clear and satisfactory, that it leads you at once through the mysteries of the science, without wading through voluminous theories, which too often prevent, instead of giving, instruction. These essays I should recommend to young artists as practical studies; at the same time, Hutton, Atwood, Ware, Riou, and others, should be carefully perused. — *E. B. Lamb. London, April,* 1837.

The new Houses of Parliament.— Though, in point of taste, I am not an exclusive admirer of either the Grecian or the Gothic style of architecture, I not only disapprove of the latter style for the houses of Parliament, as a flimsy manner of building, which, on reference to all our cathedrals, churches, and mansions, except always gloomy prison-like castles, is in continual want of repair: but I object to the site as unsuitable from its locality. As to the historical associations connected with the site (see the report of Lord Lansdown's speech, in the *Morning Chronicle*, for April 18.), they may be kept up by the preservation of Westminster Hall.

I appeal to every candid observer, who has had an opportunity of even slightly inspecting public buildings in the classical and Gothic styles, both in Britain and on the Continent, whether the former are not, from their simplicity, and the small portion of surface and angles they present to the atmosphere, far less expensive to keep in repair, and far more durable, than the latter.

I would therefore, notwithstanding the delay and the expense (which I conceive to be nothing in a case of such magnitude), revive the competition, and leave not only the style, but the site, open to competitors. A suitable plan, in my opinion, ought first to be formed, and then a site found for it. A site being given, always implies the necessity of some kind of restraint on the part of the designer, some peculiarity to which he must pay deference. No perfect plan can be formed under such circumstances. — *J. E. B.*

Warming and Ventilating.— Being desirous of thoroughly heating and ventilating the villa I contemplate erecting, I have had occasion to hear opinions from several eminent architects and others on these subjects since I came to town; and have certainly been a good deal surprised at the unphilosophical views which appear to be generally entertained respecting them. Most of the gentlemen whom I have consulted have confined themselves to advocating some particular plan or nostrum, and seem not to have taken any general view of the question, or to be rightly aware of what is really wanted, or of the probable means of attaining it in different circumstances. With many persons, the providing for a certain temperature, and the means of imparting it to certain portions of buildings, seem to be the sole objects aimed at; and accordingly I have seen, within these few days, a part of a large establishment, which is conducted by a gentleman of acknowledged talent, warmed by a number of gas flames directed against surfaces of cast iron, as if the transfer of the heat from the air to the iron would increase its absolute effect, and as if the air vitiated by the combustion of the gas were not prejudicial to the health of the persons exposed to it.

I feel some surprise at the unacquaintance of many architects with the plans adopted in the construction of the Derby Infirmary, and with the fundamental principle laid down by the late Mr. Strutt, in regard to warming and ventilation; viz. the necessity of insuring salubrity, by giving the temperature required through the medium of large volumes of air at very moderate temperatures. The application of this principle renders it necessary, not only to attend to certain circumstances in constructing the apparatus which is to impart the required warmth to the entering air, but to provide a system of duly regulated passages for its entrance and exit in all parts of the structure requiring to be heated. If the heating apparatus is so contrived as to heat only a portion of the air required, and to give out this portion to be mixed with colder air admitted from other sources, it is plain, that, in order to raise the temperature of the mixed mass to a certain point, the portion which has passed through the heating apparatus must have been heated much above this point. This cannot be done without producing bad effects of various kinds; and whatever construction of heating apparatus be adopted, it will be found expedient, where salubrity is aimed at, to give such superficial developement to the heating surface, as to enable it to communicate the required temperature at once to the whole supply of air which is allowed to enter the building, and which should all be made to pass through this apparatus before it is distributed. When the sectional area of the different air passages is properly proportioned, the heat of the current of air issuing from the heating apparatus should not exceed that of the blood, and, where circumstances will admit of sufficient developement, may, with great advantage, be kept as low as 65° Fahr.: in this case, however, the supply must be very voluminous, and the exit proportionally wide. — *T. D. April*, 1837.

Mr. Hansom's Design for a Town Hall and Market-House. (Vol. III. p. 569.) — On looking over Mr. Hansom's design for the town hall and market-house to be erected at Lutterworth, I was very much surprised to find in the principal elevation, which is to face the High Street, no doubt the best street in the town, only a blank wall on the principal floor, with half columns in antis, surmounted with its entablature and pediment. In your excellent Magazine, you have often pointed out the absurdity and inappropriateness of half columns, even when there have been openings between them; but in this design you have a slice of a portico without any means of getting at it (I cannot say under it); and a large building, placed in a conspicuous situation, without any windows in it; standing like a being endeavouring to assume an aristocratical dignity, but failing in his attempt, from the want of the expression of eyes; for, alas! he is blind. In architecture, I conceive it to be an invariable rule to make the most useful parts ornamental, leaving the less useful subordinate. Now, in this design the contrary appears to be the case: thus the windows are placed in the corners, if I may so call them, with very little decoration; and the blank wall, which serves the meaner offices of the building, is decked out with all the pomp of fluted columns, entablature, and pediment; which is as totally inconsistent as it would be to see a lady attired in the costume of a waiting-maid, and the maiden bedizened with the sumptuous ornaments of her mistress. One other small fault I will just mention in this elevation, which is the arched windows on the one-pair floor, of narrow openings, over a straight-topped opening of wide dimensions on the ground floor. Now, in this there is an evident inconsistency: in the first place, the arch does not well harmonise with the severe Grecian character intended in the building; and, in the next place, if it had been found necessary to construct arches for windows of small dimensions, it would be equally necessary to have the same kind of construction in large openings. It will scarcely be required to say more on this subject, as the reader may turn to the perspective view, and judge for himself. A wide opening in any quick sweep, as it is called by the workmen, always produces a disagreeable effect, as witness many buildings about London; where, for the convenience of having an entrance at the circular corner, the foundation of the house appears to have been removed, and the building is suspended in the air.

In making these remarks, it may be expected that I should point out some remedy for the evils complained of. This I have endeavoured to do in the accompanying plan (*fig.* 93.). Mr. Hansom says that "the Building Committee had in their calculations restricted themselves to the prospect of having such a room only as might be included in the length of this front line, although they wished for something much larger." For this reason, the plan *fig.* 94. is in the form shown in *fig.* 93. by the outline. Now, let us examine how far Mr. Hansom has succeeded. The dimensions of his room, he says, are 50 ft., including the semicircular ends; which ends will take about 13 ft. out of the extreme length; and one end is occupied by the stairs. The width of the room, he says, is to be 26 ft., thus making the square part of the room 37 ft. × 26 ft. = 962 superficial feet, less the triangles, which are cut off, being

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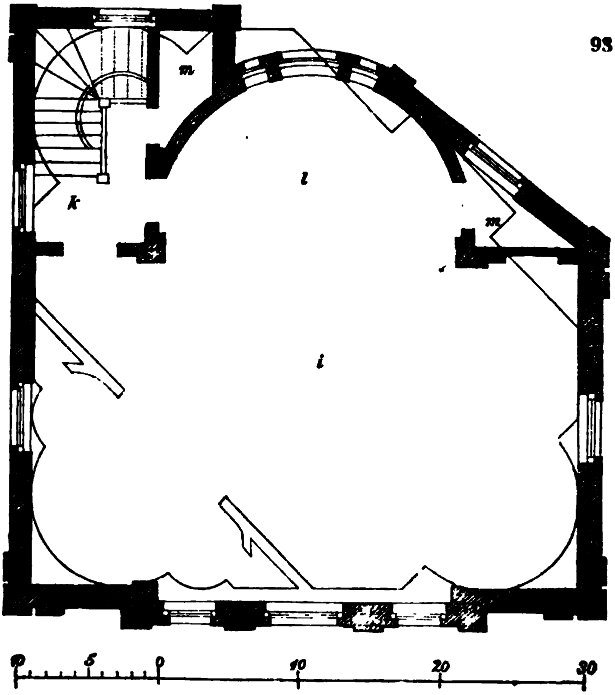

two squares of 4 × 4 = 16 × 2 = 32; which, being deducted, will leave 930 ft., the actual superficial contents, exclusive of the recesses. Now, by making the principal room parallel to the principal front of the building, and thus making use of the blank wall for windows, the dimensions of the room would be as follows:—The square part, 39 × 23 ft. 6 in. = 916 ft. 6 in., which is 13 ft. 6 in. less than in Mr. Hansom's plan. (*fig.* 94.) But in that plan I have not taken into calculation the recesses, which would certainly give more space: true, but I have given a much larger committee-room, the same number of closets, and stairs 4 ft. wide, instead of 2 ft. 9 in., as in *fig.* 94. as shown in *fig.* 93. Again, let me observe that, if more space were required in the public room, there would be no difficulty in making it 26 ft. wide, and still retaining a committee-room somewhat larger than in *fig.* 94. In that case, all the angles would be cut off, which would make the size of the room of the following dimensions: — 39 × 26 — 18 = 996; to which may be added the superficial area of the recess, gained by having pilasters instead of half columns in the exterior, about 21 × 1, making together 1017, which will be a greater number of superficial feet than in *fig.* 94., including all the recesses. The advantages gained by this arrangement would be, in the first instance, more room in the staircase, which also would take less room from the market-house; a separate entrance from the landing to the committee-room; and windows in the principal front: which latter I consider to be a desideratum, and which ought to have been obtained, even at a small sacrifice, in a building which has such great pretensions to architectural character. I trust Mr. Hansom will excuse these remarks, as there may be reasons for his adoption of the plan he has given in *fig.* 94., which I am totally unacquainted with. Be this as it may, as criticism is one of the principal means of maturing our ideas upon all

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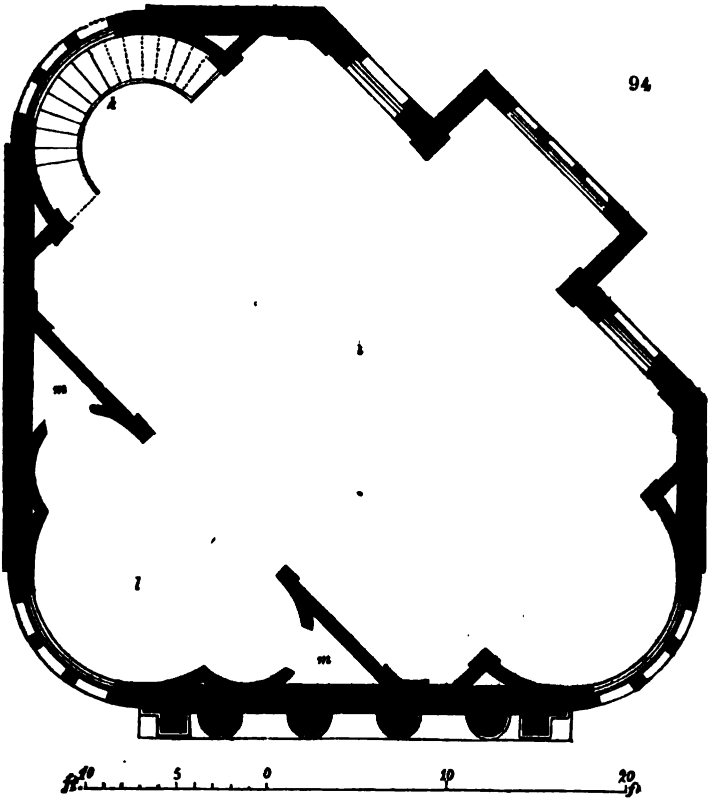

subjects in the arts, where taste is required to be united with convenience, observations of this nature may not be unimportant. I have taken the dimensions and scale from the block plan, which, I suppose, is most correct, as the scales attached to the other plans do not agree with the dimensions required. This is evidently a mistake. — *Zero.*

Art. III. *Queries and Answers.*

The Architectural Treatment of Warm and Vapour Baths. — Has it ever occurred to you to treat the subject of warm and vapour baths architecturally? Something is wanted in this department; for the dearness and bad arrangement of all sorts of baths in this country is very discreditable to it. Perhaps if you were strenuously to recommend the study of the subject, some young architects might be induced to take it up, and to attempt to devise some structural arrangements in which some compromise would be made between the modes followed in the East, where promiscuous assemblage diminishes the expense to individuals, and those which the feelings and habits of Englishmen render necessary for their comfort. For example, the sudarium of a vapour bath might perhaps be made, as in Turkey, in one large chamber, but subdivided by wire-gauze screens of 5 ft. high, each subdivision having an access from a cabinet for undressing and dressing in, with other necessaries. It strikes me that some such plan was spoken of, a good many years ago, for a grand erection which it was proposed to make in Leicester Square (which it was then said had been discovered to be private property). I shall be glad to hear your opinion of these matters. — *Henry Brown. York, May* 22. 1837.

A House with an Observatory over it. (p. 271.) — A correspondent has sent us a long article on the unreasonableness of Astronomicus in expecting to get a design for such a building for nothing; but we have not inserted it, because, considering the queries and the answers which are admitted in this Magazine, we think that of Astronomicus quite fair and reasonable, and the subject of a moderate-sized house, with an astronomical tower over it, a very fit exercise for a young architect. Why should not a man who is fond of astronomy have an observatory to his house, in the same manner as a man who is fond of plants has a green-house? — *Cond.*

Quality of American Pine. (Vol. III. p. 21.) — Observing in the specification for the erection of the Higher Market, Exeter, that American pine is used, and there being here great prejudices against its use in any part of a building, the opinions of some of your experienced correspondents, as to where it may be used with safety and advantage, would be useful to myself, and, no doubt, to others. — *Cid. Birmingham, July* 1. 1837.

ART. IV. *Institute of British Architects.*

JUNE 26. 1837. — C. Barry, V.P., in the chair.

Elected. J. H. Vivian, M.P., as an Honorary Fellow.

Read. A letter from M. A. Blouet, acknowledging the honour of his election as an Honorary and Corresponding Member; also a letter from the Imperial Academy of the Fine Arts at Vienna, expressing their regret at the death of Sir John Soane, which had been communicated to them. A paper on the Antiquities of the Palatine Hill, Rome, by the Rev. R. Burgess. A paper by H. E. Kendall, Fellow, descriptive of the temporary Pavilion erected for the late Conservative Banquet in Gray's Inn Lane.

Presented. Pen and ink lithographic drawing of the Arch of Trajan, by Miss Cole. Whishaw's Analysis of Railways. Drawing of a Capital of the Order of the Temple of Solomon, by Sir William Chambers. A Plan for supplying the Metropolis with pure Water, by John Martin, Esq. Various pamphlets from Mr. Weale. Specimens of Stone from Cheshire, by P. Legh, Esq., Honorary Fellow. Coloured print of a Roman Pavement discovered near the India House. Two outline drawings of the Duke of Devonshire's Villa at Chiswick, being the outline of the drawings for which Mr. Lee gained the silver Medal at the Royal Academy. West Front of Greenwich Church, being the outline of a drawing for which T. L. Donaldson gained the silver medal at the Royal Academy.

July 10. 1837. — *Elected.* The most noble the Marquess of Salisbury, as Honorary Fellow; J. Medland, Architect, Gloucester, as Associate.

Presented. Plan of the Roman Forum, as restored by M. Huyot, Honorary and corresponding Member. An original Drawing of one of the Ceilings of Buckingham Palace, from the portfolio of William Chambers, by R. Wallace, Fellow. Views of the most remarkable buildings, Monuments, &c., in the City of Dublin : 4to ; 1780. Description of the temporary Pavilion erected for the Conservative Banquet in Gray's Inn Lane, by H. E. Kendall, Fellow.

Read. A paper, by W. S. Inman, on a new Girder, invented by the Chevalier Martin.

THE
ARCHITECTURAL MAGAZINE.

SEPTEMBER, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *Palaces and Ruins, with some Remarks on the Ceilings, of the Middle Ages.* From an unpublished "Tour in Italy." By Henry Noël Humphreys.

I can scarcely begin to note down my impressions respecting the dwellings of the Roman nobles, and the ruins from which their most precious materials were torn, without saying something of their inhabitants; but so much has already been said and written upon the society of Italy, and upon the manners, customs, and pursuits, as well as morals, of the Italians, from one end of the peninsula to the other, that I will abstain from adding to the mass, and thus avoid the disagreeable task of unsaying (not to use the harsher term, disproving) much that has been advanced upon that subject, and, frequently, by those who had the least opportunities of judging. Those who would know more of the matter, I refer to the graphic pages of Beckford, the lively descriptions of Lady Morgan, the entertaining diary of Matthews, &c. Avoiding this part of the subject, I may, however, still say something of the origin of the existing nobility of Rome, at the head of which, unquestionably, stands the house of Borghesi, of Genoese extraction; though, in point of mere wealth, perhaps the Piombini take the precedence, in whose present representative are centred the honours and estates of four great families; viz. the Ludovisi, the Buoncompagni, and the Ottoboni; besides which, the principality of Piombino, when sold to the Grand-Duke of Tuscany, produced the prince a sum in itself a treasury. Some others of the leading nobility are, the Princes Ruspoli, Rospigliosi, Barberini Braschi, Panfili-Doria, Altieri, Sciara Colonna, Sforza Cesarini, and Massimi; the two latter of whom claim lineal descent from ancient Roman stock, and assert that the blood of the Cæsars still flows in their veins.

Many of the old historic names of the middle and lower ages, the Conti, the Orsini, the Lancelotti, the Frangipani, are still found among the Roman nobility, although the heads of many of the greatest families, during the predominance of the imperial interest, settled in Germany, and their descendants are still to be found ranged among the harsher names of the Austrian aristocracy. But nearly all the nobles of Rome, who are *now* really great and wealthy, derived their importance from the popes who were fortunate enough to fill the papal chair in those palmy days of popery, the sixteenth and seventeenth centuries. The last of the popes who possessed much power was Pius VI., whom the French revolution surprised in the possession of the see of Rome. His subjection gave the final blow to the sinking splendour of the triple crown, since which the place has not been worth having; and the cardinals elect, not one of the aristocracy to make a fortune, but one whose origin places him under the control of the *sacro collegio*, and in whose name they can dispose of a cardinal's hat, or other patronage, among their own connexions and interests: such is said to be the case of the present Gregorio XIV.

In 1605, Borghesi, a Genoese, was elected pope, as Paul V.; during whose pontificate the estates of the Cenci family were confiscated under tragic circumstances, which are too well known to need repetition. Since that period, the Borghesi family has been considered one of the first in Rome; and few strangers are, perhaps, aware, whilst they take their evening drive through the enchanting groves of the beautiful Villa Borghese, that they are upon the patrimonial estate of the unfortunate Cenci, oft traversed by that loveliest of fiends, the fair Beatrice, whose charms still live in the soft touches of the pencil of Guido, and whose fearful history has been made familiar to our nation by the impassioned verses of Shelly.

The importance of the Barberini may date from the election of one of the family to the popedom, under the name of Urban VIII., in 1623; that of the Pamphili, from Innocent X., 1664; of the Rospigliosi, from Clement IX., 1667; of the Altieri, from Clement X., 1670; and, though this view of the origin of the Roman nobility may not be fully borne out in every case, yet it is fair as a general calculation of the origin of the power and preponderance of a majority of the present wealthy families of Central Italy, who have nearly all of them palazzi in Rome. Having ventured the above somewhat hasty and, perhaps, rash conclusions as the result of my own imperfect researches respecting the Roman nobility, I come to the subject of this memorandum, their habitations. It was the custom of a pope, as soon as he was elected, to commence a splendid palazzo, which became, as it were, the escutcheon of his family, and descended to his "nephew," who was, not unfrequently, a natural son. Thus the 300 churches of Rome are surpassed in number by her more than 300 palaces; for every *nipote del papa* had his palace, while it was not every pope who built a church. Vasi enumerates sixty-five palaces, possessing considerable architectural beauty; and the student might select, perhaps, a dozen, which, as masses or in parts, are among the most perfect productions of the modern art in the palatial style.

These palaces form, in fact, from the era of Bruneleschi to that of Palladio, a perfect school of art, just now beginning to be appreciated, and which such works as Donaldson's *Doorways*, &c., are now making known, though too slowly, to the English student who has not the opportunities of travel. Solidity is the marking character of the architecture of these palazzi; a massive doorway (a carriage entrance) admits at once to the foot of the grand staircase, which rises from either side, and conducts to galleries which surround the court (of which the palace itself forms the four sides), and upon which open the entrances to the apartments. The front of the palace is always in a line with the street (the Farnesi being the only detached palace); from which circumstance the elevations, perhaps, lose much of the effect they would otherwise produce; and as, in the heyday of Roman palace-building, no accommodation for foot passengers was contemplated, the streets are narrowed by precisely the width which the trottoirs should have occupied. From this circumstance, the Corso (an avenue of palaces) appears narrow, and loses that spaciousness of effect which is all it wants to make it the finest street in the world.

An objection has often been made to the great doorways and open staircases of the palaces of Rome, on account of the filth which not unfrequently accumulates there; but this is not the fault of the architect, but of the slovenly noble, who keeps no porter, or *Svizzero*, at his gate, to protect his house from such pollutions. In Genoa, where a similar construction prevails, no such inconvenience is observed, as the great doors are either kept closed, or are protected by a porter; and such, indeed, is now the case with many of the best houses of Rome. Though it was a fashion for every pope to commence a palace with his papacy, yet, as the popes were generally old men when they were elected, they frequently died before the palaces, which were to serve, in some sort, as their monuments, were completed. When this was the case, the building was generally suffered to remain unfinished; and this was the fate of the celebrated Palazzo Farnesi, perhaps the finest in Rome, to erect which Cardinal Farnesi (Paul III.) effected the destruction of the Coliseum, from which he tore the materials for this most princely residence. In a similar manner perished many interesting remains which time and the Goths had spared; and from similar devastations arose, at a later period, the Palazzo Barberini, which gave rise to the pasquinade, "*Quid non fecerunt barbari, fecerunt*

Barberini." There are still many prints existing of beautiful monuments of antiquity, the relics of ancient Rome, which had withstood the warfare and shock of ages, till within two or three centuries of our own times, and some that were nearly perfect only a century or two ago, of which now no vestige remains; and it is curious to reflect that, had our own venerable antiquarian, Stowe, visited Rome, even in his day, we might have known much of the architecture of the Romans, which is now buried for ever from both the antiquarian or the student.

If a cardinal or noble had any interest at court, he found no difficulty in obtaining permission to pull down an ancient temple, in order to use up the stones and precious marbles in the erection of, perhaps, a range of stabling: or, perhaps, the columns alone were wanted, for some more decorative purpose; in which case a splendid mass of architecture is as ruthlessly thrown down, in order to tear away its valuable supports. Previously to the light which broke upon literature, in the era of Leo-X., this was still more common; and it may safely be calculated that every building in Rome, of any consequence, erected anterior to that date, is of classic stone. This, too, was the more unpardonable, as it might, at that time, have been easily effected without spoliation; for, when we consider that the ancient pavement of Rome still lies, in many parts, beneath 20 ft. of fallen ruins, it is clear that the abundance of building materials, at that period, must have been almost incredible; and the barbarous cupidity of the nobles, in pulling down the superb remains, yet erect, in all their majesty, before they had half-exhausted the mighty masses at their feet, admits of no excuse.

Some of the palaces built at the period which may be termed that of the resurrection of Roman art are extremely beautiful. It was an era when the mighty minds of Dante and Petrarch, and the gayer one of Boccaccio, that illustrious triumvirate of intellect, had given an impetus to the spirit of the time, which was felt like an electric shock through every channel of the arts; that Bruneleschi, following up and correcting the fanciful, yet elegant, genius of Giotto, and the bolder, though perhaps wilder, spirits of Arnolpho di Lepo and Orgagna, originated a style which, without retaining any of the principles of the Gothic (if the term may be so used), displayed much of the *feeling* of that era. Bruneleschi combined the purity and simplicity of classic architecture with the lightness of that which rose upon its ruins, and conceived his designs with a freshness and originality of feeling, which was the distinguishing characteristic of his age.

With Bruneleschi arose the elegant taste which has been since called the *cinquecento*, and which was carried to its greatest perfection by his immediate follower, Bramante; a style, or rather manner, which, although depreciated by many able modern architects, as more the offspring of the sister art of painting, than of the sterner genius of architecture, must ever be admired for its graceful symmetry, the beauty of its delicate and inimitable arabesques, and its felicitous appropriateness to the higher classes of domestic architecture, and which appears to be eminently suited, in many respects, to the luxuries, or rather wants, of the present day.

There was in the classic architecture of Greece a coldness, which was its most striking attribute. Born in the East, and nourished to its perfect growth beneath the glowing sun of Greece, its deep porticoes and projecting cornices were contrived for shade, for protection from the heat, and to convey that effect of repose and coolness which is so delightful in a hot climate. The ancient Romans, with the literature, adopted the architecture, of Greece, but without adapting it to their cooler climate, as we may adopt many customs of the gayer French, through fashion, which are ill suited to the graver character of our nation; but, at the *renaissance* of the arts (we do not possess an equally happy term), Grecian was no longer fashionable in Rome: Greece was forgotten; and from the relics of ancient art existing in the imperial city itself arose a style eminently suited to the climate and the age. The architecture of the North, in contradistinction to that of the East, possessed a warmth of effect, and was contrived for shelter, for protection from cold, and to convey, in its rich and varied traceries, in its fretted recesses, and clustered columns, an effect of richness and comfort in keeping with the enjoyments of northern nations. It was a union of the effect of this style with the cooler beauties of that of classic art that produced the *cinquecento* at Rome, which combined the majestic beauties of the models still remaining in Rome, with the more compact and domestic tone of the Tedescan. In the more northern capital of Tuscany, the amalgamation partook, at first, more strongly of the Gothic; and when, a century later, the march of reviving art reached the fair plains of France, under the protecting guidance of Francis I., the climate and feelings suggested a still stronger admixture of the Gothic arrangement. When it stretched to England, again, half a century subsequent to its reaching France, the changes it produced were at first principally confined to ornament and detail: without changing the construction of our Gothic halls, we merely surmounted their clustering columns with a mongrel species of Corinthian capital, or effaced our crockets and tracery for a scroll of acanthus; producing the strange, but rich and not unpleasing, mixture which antiquaries now admire as the Elizabethan, or British semi-Gothic.

The two palaces in Rome which best illustrate what I have said of the elegant style originated by Bruneleschi, and carried out so successfully by Bramante, are those of the Cancelleria, and the palazzo on the Piazza Scopa Cavalli, near St. Peter's, now belonging to the rich banker Torlonia, both by Bramante; the latter having been built for Cardinal Adriano Corneto, and becoming afterwards the residence of the ambassadors of England. The first of these was, like so many others, built with travertine, torn from that mighty mass, the Coliseum, aided, likewise, by the demolition of a triumphal arch of Gordian. This style was, by the great painter Raphael, and the architects Maderno, San Gallo, and others, carried nearer to the classic model, at the expense, perhaps, of some of its delicate elegance. The path of Michael Angelo must be considered alone: without departing from the feelings excited by the impulse already given, his original genius brooked neither the restraint of the *cinquecentisti*, nor the severer rules of ancient art; but, in a bold and picturesque manner, he struck out of both, so that his works cannot be brought in as examples, in a chronological statement of the march of art, but rather form a brilliant episode, unconnected with the general thread. Perhaps the best examples of his style are, the Palazzo Farnesi, splendid, yet simple, with its magnificent cornice, which an eminent architect of the present day has designated as "a noble crown to a noble mass;" and the Campidoglio, the residence of the senator, or chief magistrate, of Rome, which occupies the site, and, indeed, rises upon the foundation, of the ancient Capitol. In speaking of this period of architectural art in Italy, the reflection (almost inconceivable in this age of railroads and rapid communication) occurs, that, whilst the almost classic pile of St. Peter's was majestically rising in Rome, we, of the northern isle, were still busy with the pointed windows and groined roofs of our cathedrals; that, while the work men were chiseling the Grecian capitals of the gigantic columns of the Roman cathedral, we were just adding that morceau of petrified Brussels lace, Henry VII.'s chapel, to Westminster Abbey, with all its frettery, tracery, monkeys, dragons, owls, and non-descripts, the wild fancies of the legend-pregnant north, the land of witches, fairies, and hobgoblins.

In short, nearly two centuries elapsed from the revival of art in Italy, ere the shock, or rather influence, of it was felt in England.

To complete the slight sketch I was endeavouring to trace of the progress of Italian architecture, I may state that a richer, and perhaps overcharged, style prevailed, to some extent, immediately after the age of Michael Angelo, influenced or produced by the grand, though irregular, efforts of that colossus of the arts. The most beautiful specimen of the style I allude to is, perhaps, to be found in the Palazzo Madama, built by Cigoli, for Catherine de Medicis. This palace has a rich, and, at the same time, noble and majestic, effect, and is the last which presents the peculiarities incidental to the revival of art. I may here remark that one of the great and striking peculiarities of this period was the facility with which each architect might be recognised by his manner of invention, and by the character of his finishing touches: every work was, as it were, an original picture, in which the peculiar hand of the architect was ever evident, thus proving that the art was not yet reduced to a matter of rule and compass, but was still under the dominion of the genius and fancy of the architect.

Another period succeeded: the works of Vitruvius were discovered; and the rules and measurements he laid down being within the most ordinary capacity, the inspirations of original genius gave way to servile copies of the ancients, and invention and fancy were alike discarded. Another and more conventional style now arose, in which all architects became more alike. Giacomo della Porta, Domenico Fontana, &c., and at their head Vignola, have left some of the finest specimens of this manner, which, founded entirely upon the principles of the ancients, with their bolder projections and massive columns, produced a more imposing effect for public buildings, but was, in my opinion, much inferior for domestic or palatial edifices. Rome, however, presents numerous and fine works, both public and private, in this taste, which was still more tamed down in ornament, and conventionalised, by Palladio, and prevailed till the Louis Quatorze style, rendered popular by the great talents of Le Brun, spread over Europe, corrupted the simplicity of ancient art, and finally led to that *mesquin* and meagre taste into which the arts fell, all over the Continent, towards the close of the eighteenth century. In Italy, however, their fall was not so profound; for Palladio in the north, and in Rome Bernini (that last of the race of those great sculptor-painter-architects who illustrated the history of art in Italy alone), have left such models of a pure, if not magnificent, style, as have afforded the last props to declining taste. It has often occurred to me, that at the revival of the arts, when the impulse was given by Bruneleschi, Bramante, and Michael Angelo, it would have been well could every remnant of ancient architectural art have been swept away. A new style was originated, which, left to itself, might have produced a sublime, and, at the same time, picturesque, architecture, of which we can now have no idea. At all events, we should have had no miniature caricatures stuck, by way of what is called a portico (a term often used in a wrong acceptation), at the entrance of the most inferior dwellings; and Grecian Doric, from "accurate measurement of the temples, taken on the spot," introduced in porters' lodges or dissenting chapels. If we must have copies, why cannot we choose as models fine palazzi of Rome, which would surely be more appropriate to buildings of a private or domestic character, than a copy of a pagan temple, or even of a Christian cathedral. On the monumental style, I have ventured some few remarks, in my rambles among the churches of Rome.

In taking for models some of the early palaces of modern Rome, the beautiful *façades* of which are admirably suited to noblemen's residences, or to club houses, and other buildings of similar character, ministering to the luxury of the times, we might originate a school, which, followed out (not servilely, but imaginatively), might create for us a national architecture, and one that would be far better suited to the wants and tastes of the times, than anything either the Grecian or the Gothic style can supply. It would be a purer and more poetic admixture of ancient and modern art than the Elizabethan manner, or that of any other period or country in Europe. And, if any one should be so hypercritical, or fastidious, as to prefer against these models the crime of not being purely classical, I may reply that they are probably imitations of ancient art, of the kind which ought alone legitimately to be copied; namely, dwelling-houses: for even so recently as in the sixteenth century, there existed in Rome vestiges of the domestic architecture of the ancient Romans; and, among others, part of a small palace of Domitian, which remains, may, at all events, have suggested the style of the *cinquecentisti*; and, if so, it must surely be in better taste to design our domestic buildings from ancient remains of a similar character, than to reduce and caricature their temples, by attempting to adapt them to purposes for which they were never originally designed. I have made drawings of a few of the most interesting of these palazzi, which, with the assistance of some intelligent architect, I mean, when I have time, to print, in order (if I find that it has not been done) to afford to those who have not yet had opportunities of studying them on the native soil, the means of judging whether these specimens of art do not offer the means of striking out a style eminently suited to the feelings of the present age.

In speaking of the palaces of Rome, I have hitherto confined my remarks to those possessing architectural pretensions, or those remarkable for the barbarous spoliation which afforded the materials for their erection. I have mentioned none historically; for which omission, although my intended limits are nearly filled, I will endeavour to make some amends, by saying a few words about the Vatican, the *Palazzo Apostolico del Vaticano*; that spot on which long hung the destinies of Christendom, and whence those bulls, excommunications, or indulgences, issued, which once carried war, wretchedness, and vice over the fairest regions of Europe, to forward some paltry intrigue of popery, or to cement some family compact, or promote the private interest of a pope. But this is the dark side of the question: there have been few Borgias; many good men have swayed with equal-handed justice the thunders of the church, and where is there great and irresponsible power which has not, at some period, been abused? The Vatican was not the original habitation of the pope: the links of that papal chain, which once enfettered Europe, were riveted at the Lateran, the residence originally provided by the converted Constantine; and it was not till after the temporary removal of the papal chair to Avignon, and the subsequent return of the popes to Rome, that the Vatican became their principal residence. Originally, there existed upon this spot only a few scattered buildings, the residences of the priests who officiated at the neighbouring Basilica of St. Peter's. There is a record, however, of some repairs done by San Simacco, to the "palace adjoining St. Peter's," as early as 499, scarcely more than a century and a half after the establishment of the religion by Constantine; and Eugenius IV., in 1147, rebuilt it with sufficient splendour to serve as the residence of Peter II. of Arragon. Since that period it has been repaired and added to, by various hands, at various periods; and the great court, which was the splendid work of Bramante, and sufficiently spacious to give a tournament in on the marriage of Count Altempo, *il nipote del papa*, has been divided into two. The principal part of the palace now visible from the Piazza di San Pietro forms three sides of a court, open on the side next the splendid piazza; and four tiers of galleries, or open corridors, the second of which, having been decorated with beautiful arabesques and medallions of scriptural subjects by Raphael, bears the name of *la Loggia di Raffaello*, and is now enclosed with glass, to preserve as long as possible the too perishable works of that immortal artist.

I think I have already stated that the usual form of a Roman palace is a quadrangle, containing a spacious court in the centre, and surrounded by galleries similar to those I have just described, from which doors communicate to the apartments. The entrance from the street is by a carriage doorway, to enable company to be set down at the foot of the grand staircase, which ascends from the right and left to the first gallery, communicating with the *piano nobile*, or principal floor; the ground floor never being used, except for inferior purposes. In the vast mass of the Vatican, however, this disposition was not always adhered to in the various additions which have, in the course of ages, added court to court, wing above wing, to the building, till it has nearly overtopped its neighbour, St. Peter's, and in some degree injured the symmetry of its effect. There are at present twenty courts, with their colonnades, eight grand, and two hundred small, staircases, and apartments without number. Its actual dimensions exceed those of the Louvre and the Tuilleries united, although it covers less ground; and its entrance is by the splendid staircase of Bernini, which rises from beneath the grand colonnade of St. Peter's, where carriages set down to attend the papal levees, and the great *funzione* of the Sistine chapel, which is one of several contained within the precincts of the palace. Some of the apartments are very splendid and interesting, particularly those of Alexander Borgia, from the rare and peculiarly elegant taste of the ceilings, magnificently rich, and yet so simple. There are also the apartments of Giulio II., now called *le camere di Raffaello*, and the splendid library; and these, in conjunction with its matchless galleries of ancient art, its superb chapels, and its great adjunct, St. Peter's (combined with its position, affording a splendid panorama, as far as the hills of Tusculum, more teeming with glorious association than any other spot on the earth), place the Vatican, without doubt, at the head of European palaces.

The casual mention of the ceilings of the Borgia chambers has suggested to me another point of comparison between the palazzi of Rome and the town residences of the English nobility, much to the disadvantage of the latter. In the interior decorations of a Roman palace, the principal ceilings were ever the most prominent feature, and the first talent of the day was employed in their design and pictorial embellishment. Annibal Carracci was many years employed upon the ceilings of the Farnesi Palace; the celebrated Guido, at that of Ruspigliosi; Pietro da Cortona, at that of the Barberini; and Guercino produced the acknowledged *capo d' opera* of fresco painting (his Aurora) on a ceiling at the Ludovisi. In London, I think, there is in no private residence, at least with a few miserable exceptions, any painted, or even highly decorated, ceiling; yet nothing would add so much to our first-rate mansions as enriched ceilings. We make Gothic or *cinquecento* walls or windows with tolerable accuracy, but the crowning glory of the rich taste of the middle ages, the arched and richly emblazoned ceiling, is lost sight of, and every thing is thrown out of keeping, by a flat white expanse, terminating in a cornice, as near the style of the epoch as so stubborn an opponent as the flat white ceiling above it will allow. The expense of vaulting would not be so much greater; and, by sending some decorative painters to study the ceilings of the palaces of Rome, or those of Genoa and Venice (where therè are a few splendid specimens of arabesque decoration in the older palazzi), this enrichment to the internal decoration of our domestic architecture, might be studied, and the taste, once started, our own invention and design might soon surpass our models; though this is saying much, when we reflect that a Raphael, a Zucchero, and a Michael Angelo have been employed upon them. The want of this desideratum is sadly apparent in the apartments of the new palace at Pimlico, where the ceilings are, for the most part, flat, the only ornament being a little "picking out" with gold; and this flatness prevents the rooms having that air of nobleness and grandeur which is apparent in most of the Italian palaces, even of private individuals.

A few good and accurate copies of arabesque, and otherwise highly enriched ceilings, would probably introduce a new branch of industry, in which many, unable to excel in the highest branches of art, might obtain a highly creditable and lucrative employment.

A period is fast approaching when neither printed papers for the walls, nor conventional composition ornaments for cornices and ceilings, will satisfy that craving for elegance and art which is beginning to distinguish this highly educated age, even among the middle ranks. A keener perception of the beautiful is abroad; and the superior skill displayed in the design and execution in the most ordinary articles of domestic use, has contributed to form that refined taste which, in an age teeming with talent, requires originality and excellence in design, as well as mere richness in execution, which is but a false, vulgar, and paltry substitute for true splendour. I prognosticate that, ere long, elegant arabesques of quaint and fanciful invention, the work of *artists*, will entirely supersede those unmeaning scrolls and flourishes of flock papers and composition ornaments, which may be now purchased by wholesale, and with which a whole row of genteel houses may be finished off to *match!*

The art of interior decoration was, doubtless, much better understood in Italy, in the middle ages, than it is now in any part of Europe, and it was most probably derived from the remains of the ancients. Raphael spent many solitary days in the buried halls of the Cæsars, on the Palatine Hill; and in those subterraneous chambers, no doubt, imbibed much of that delicate taste so beautifully exemplified in his *loggia;* a supposition rendered more probable (though the classic models he may have studied have long since fallen into decay) by the discovery of Pompeii, which reveals again that style of Roman art; and in many of the superior houses of which the decoration might almost be taken for the elegant tracings of Raphael himself. The gorgeous remains of the palace of the Cæsars, indeed, most likely presented a richness of decoration much nearer to that displayed in the great age of modern Italian art, when the science of interior decoration was so well understood.

Many interesting habitations of the Roman nobility have n- been alluded to in the above sketch, in consequence of having attempted their description in my circuit among the villas; to which appellation, either from locality or construction, most of the other Roman palazzi more properly belong.

ART. II. *Essay on the Rise and Progress of Architecture in England.* By R. E. PHILIPS, Member of the Arch. Soc.

(*Read at the Monthly Meeting of the Architectural Society, June* 13. 1837.)

> ——— " Art thrives most
> Where Commerce has enrich'd the busy coast:
> He catches all improvements in their flight,
> Spreads foreign wonders in his country's sight,
> Imports what others have invented well,
> And stirs his own to match them, or excel." COWPER.

THERE is no subject, perhaps, more interesting than architecture. From the earliest ages of antiquity, when it first appeared, it has descended on the stream of time with various success, but with important results to human nature. Its effects upon the moral, intellectual, and general habits of mankind have been in proportion to its encouragement by the enlightened few who were capable of judging of its merits, until the people caught the flame of transport, and, warmed by the genius of the poet, acquired a taste which at once proclaimed their character, and stamped the age in which they lived with glory. It is to such keen sensibility in the public mind that we must look for lasting encouragement to the efforts of genius. The muse languishes in neglect when the public attention is so engrossed with puritanical zeal or political care, that it cannot afford a few moments from the toils of the world, to look within its own recesses. The great end of all the arts is, that of making an impression on the imagination and feeling: that the imitation of nature frequently does this, I believe will be readily admitted, but that it also fails, on some occasions, I conceive will be also conceded. The true test of the arts, therefore, does not rest solely upon the production of a true copy of nature, but whether it answers the end of art, which is to produce a pleasing effect upon the mind.

Architecture does not rank itself under the banners of an imitative art, but, like music and poetry, appeals directly to the imagination; there is in architecture an inferior branch of art, in which the imagination has no concern; it does not lay claim to its appellation as a polite and liberal art from its usefulness, or as an accessory to our wants and necessities, but from higher and loftier principles: we are convinced that, in the hands of a man of genius, it is capable of inspiring sentiments, and of filling the mind with great and sublime ideas.

The influence of the fine arts upon the intellectual and moral character of a people, their utility and their value, as conferring upon a state in which they are justly appreciated the highest proof of civilisation, are considerations which cannot be too much entertained; but persons are too apt to regard the art of design as a mere elegance, as the insignia of wealth, rather than the production of wisdom, and as more the effect of pleasure than utility.

Architecture is the union of all the fine arts: it imparts life and energy to them all. The bold modelling of sculpture, the grace and colouring of painting, put on all their charms, with the advantage of a moving variety, in connexion with one subject: in its developement of character it also displays the utility of the fine arts, and the harmonious blending of the whole, with a view to some definite result, instructs the world; the heart is softened and the understanding improved. Hence the utility of architecture, sculpture, and painting, to civilise society; their influence in improving the social condition of our species will never be questioned by those who are possessed of refinement; and even such persons as are insensible of their advantages are hourly experiencing their good effects, in their association with more susceptible minds. Architecture comes in aid of history, and in it the illusions of fancy are blended with truth; it proclaims the genius of the man, but it leaves the meagre outline to the historian; and, by making the spectator sensible of the source of knowledge, invites him to future study and contemplation: nothing is calculated to afford more solid instruction than architecture.

That there exists considerable apathy on this subject in many quarters, I think will not be denied The mind which can behold a well-wrought work with unconcern must be devoid of taste and sensibility, unworthy of an enlightened age; but I trust, if we cannot awaken their taste, we may at least rouse them to the consideration of the utility of architecture: encouragement lights the lamp of genius to shine in modest security to after ages, or creates a prodigious glare, to live but a short time.

The sternness and inflexibility of character which once belonged to this nation are gone: we blend the riches of Tyre and Carthage with those of Athens and Rome; we profess to have received lights which were hidden from those nations; we compete with all Europe, in every acquirement worthy of an enlightened nation; but coldness and jealousy have for too long a time cast their mantle over the efforts of genius, and left the aspirants for fame in architecture to feed themselves on their own zeal, or to perish for want of the necessary stimulus to exertion. The patronage which was once afforded has long since ceased; architecture, like much else, has been monopolised by adventurers, incompetent to judge of its excellence, and much has been rejected which would have met with success, had it been exposed to the test of public opinion, and not depended, as it has hitherto too often done, on the private feelings or caprice of those who have catered for the public taste.

Is it necessary, for the proof of our present position, that we should waft our way through bygone ages, when the great nations of the earth were wont to think that there was no more imposing or enduring method of transmitting their records to posterity than by writing their histories in stone? and need we visit the temples of Balbec or Tadmor in the Desert, or those mighty and gigantic forms of the glory and superstition of the dark people of the Nile, which neither destruction nor the iron hand of Time has been sufficiently powerful to efface? need we ascend the Ganges, and, in our approach to the Holy City, behold those lofty minarets towering above the dense mass of structures on the curved margin of the stream, the heart glowing as the gorgeous panorama discloses its temples, its towers, its long pillared arcades, and balustraded terrace, peeping through the interstices of some highly sculptured building? or need we drink of the waters of the Ilissus, and, in romantic visions, contemplate the clime of Agamemnon, when Sophocles wrote, when Phidias designed, when Pericles governed, the organ through whom the pervading enlightenment of his nation was expanded in all its glory to the world? need we explore the Tiber, and visit that gifted country, the chosen land from which the light of modern civilisation proceeded, and, under her bright sunny skies, behold her gorgeous palaces, her magnificent ruins, her relics of departed greatness, treading the now desolate Forum? No; should we not rather direct our course on homeward shores, and behold the Thames, " the most loved of all ocean's sons," and on its borders contemplate the magnificence of a capital, the simplicity of a hamlet, the abode of royalty, the cabin of the peasant, the ruined remains of the baronial hall, the dark shady forest, the classic ground of Oxford, " Eton, famed for tutored lore," the proud forest of lofty masts, the flags of every nation fluttering in the breeze, the huge and stately messenger of England's tremendous thunders, until, swelling into a vast expanse, the waters lose their designation in the conflux; beholding, in the gliding course, Netley's favoured spot, the ivied ruins, the clustered columns, the once inhabited cloisters; or even extend your varied course, and on that far-famed river, the Wye's undulating shores, behold the ruins of Tintern: entering the same, let the most stoical mind deny its admiration, or the most tasteless observer his attention, as the eye ranges rapidly along those elegant columns, with their aspiring arches, and, stretching under their sublimity, gain in beauteous perspective the grandeur of the eastern window, to which decorations of art are now added those of time, portions obscured by the growing ivy, others canopied by the spreading shrub; while the tendrils twine in the tracery of its once radiant lights. Far too numerous are the specimens of these great and sublime erections for me to enter into any detail: but let us ponder for some short moments on their peculiarity.

To the ordinary reader or amateur, great perplexity and uncertainty must occur, on hearing or reading the different terms, ancient architecture, Saxon architecture, Norman architecture, and English architecture: to make these intelligible, to treat them in the historical manner, perhaps, would be the more distinct.

The heavy circular manner of building which prevailed throughout Christendom, from the fall of the Roman empire to the twelfth century, was the Roman or Grecian style incorrectly or rudely executed. Amongst us it is called the Saxon style, because it prevailed during the Saxon period.

On the first introduction of Christianity amongst our Saxon ancestors, at the conclusion of the sixth century, they consecrated many of the pagan temples to the Christian worship, according to the instructions they received from other quarters; and they erected temporary oratories of wood, as we learn from Bede and others.

Very soon, however, the Roman missionaries, who converted them, instructed them in the construction of churches, after their own mode. At the beginning of the seventh century, Paulinus, the first archbishop of the Northumbrians, appears to have been the chief architect; at which period he built churches at York, Lincoln, and other places. His successor but one was Wilford, an Englishman, who greatly surpassed his master, as the churches he built at Ripon and Hexham were considered to be very fine erections; but it appears that these architects visited Rome, and even brought with them, on their return, workmen to execute the works then progressing in England; therefore, it is considered that the Saxon style was not of our invention, but brought from Italy during this century. During the ninth and tenth centuries, England was much harassed by invasions: the invaders, called Danes or Normans, were guilty of great devastation on the existing religious monuments: on the delivery of this nation, and that of France, from this scourge, and a state of tranquillity and lasting peace ensuing, it enabled the nobles and affluent to rebuild their demolished edifices, and build others, surpassing their former structures.

William the Conqueror, during his short reign in Normandy, and previously to his invasion of England, built two churches and abbeys; and the nobles vied with each other as to the magnificence of their erections. Such were the Normans, a most industrious and religious people, but in a particular manner admirers of ecclesiastical architecture; such were the people who arrived, in the eleventh century, in this country; and, at this time, the most celebrated schools of literature and of the arts, therefore of architecture, were the abbeys of Bec and Caen, the former of which places produced those three great architects, Lanfranc and Anselm, archbishops of Canterbury, and Gundulph, bishop of Rochester. These prelates, as well as the majority of those abbots who arrived, were able architects; and it appears their sole aim and endeavour, in the erection of their various structures, of which there were a great many, were, evidently, to produce the sublime and beautiful. For the former purpose, their churches were long and lofty, and for the latter neat, appropriate, and perfect ideas, with the assistance of ornaments of new invention. In their endeavour to effect the objects in view, to make their religious erections the most sublime and beautiful, their ingenuity and improvements became apparent; and, consequently, a new style produced, called the pointed style, the invention of which this country certainly lays claim to. The idea of the pointed style having originated with the Saracens was contended for by Sir C. Wren, and is so by many modern writers. But why should we wander to the most remote corner of the world, and, perhaps, into the regions of fancy, in search of an invention to which our own clime lays claim? and why should we take such pains to prove a plant to be an imported exotic, when we may find it in every stage of its growth flourishing vigorously in our own soil?

We have seen above, without dispute, the Normans of the eleventh and twelfth centuries were a most industrious and ingenious people, possessing the most ardent passion for ecclesiastical architecture, vying each other as to the grandeur and beauty of their structures. In addition to the effect of grandeur which they gave to their churches by their length and height and beauty, by the diversity of ornaments, they added arches or arcades, a series of small round arches, as we observe in St. Botolph's Priory, and in the basement of Durham Cathedral; diversifying these in various ways, as may be seen at St. Augustine's Priory, Canterbury. These plain and intersecting arches were sometimes irregularly intermixed; the pointed arches thus formed being, at first, only in basso relievo; but it was soon, likewise, in alto relievo, as in the remains of Archbishop Lanfranc's work, at Canterbury Cathedral, and elsewhere. Some of the first, if not quite, of the open arches in the pointed style now existing are those of the Church of St. Cross, near Winchester, made by that great encourager of the arts and architecture, Bishop Henry de Blois, King Stephen's brother, 1132.

It would be rash to pronounce Bishop de Blois as the author of the pointed style of architecture, since we have evidence of other churches being built, about this period, in the same mixed style of pointed and circular work; it is however, to be observed, that, before the close of the twelfth century, the circular style was entirely laid aside.

In all the works executed during the middle and latter part of the twelfth century, a confused mixture of style is every where discernible, as might be expected, one fashion beginning to be left off, and another introduced. In a general way, the arches were altered previously to the columns; hence it is nothing uncommon to find arches of the sharpest points resting on Saxon pillars of the greatest circumference. It did not, however, long escape the indefatigable observation of our architects, that such heavy supporters ill accorded with the lightness of the aspiring arch. We have a striking and most interesting example of this, and other improvements, which took place in this style, in the eastward portion of Canterbury Cathedral; and those who cannot see the original, may satisfy themselves by having recourse to Carter's work on *The Ancient Architecture of England.*

As we have the advantage of circumstantial accounts of this building and of the difference between it and the former structure, erected a hundred years before, which account is drawn up by the intelligent monk Gervase of Canterbury, I may be excused for dwelling shortly upon the subject. He tells us that the pillars of the new choir were of the same form or thickness as those of the old, but were 12 ft. longer; that the former capitals were plain, while the latter were delicately carved; that there were none of marble in Lanfranc's work, but that they were numerous in the works of the two Williams, that the vaulting of the ailes of the choir was plain, whereas that of the new choir was groined. The former choir had a flat ceiling, ornamentally painted; that of the succeeding, elegantly vaulted, with hard stone for its ribs, and light stone for interstices.

The improved architecture of this, the most distinguished church in the isle, could not fail of working the adoption of the style when occasion offered for rebuilding or repairing them. Lincoln Cathedral appears to have been amongst the first under the renowned skill and piety of its bishop, St. Hugh, 1195, except the west front, which is almost all the work of the Norman prelate Remigius; and the towers, the groining, the screens, and other decorations added in the fourteenth century. The vast pile of St. Mary's Church and Chapter-House at Lincoln is in the simple style of the first or lancet. Awful and beauteous, beyond the conception of those who have not witnessed the scene, is this.

In 1202, Bishop Godfrey de Lucy, amongst his great works, began to rebuild the eastern part of the Cathedral at Winchester, without the least mixture of Saxon. In 1227, Archbishop Walter de Grey began to rebuild that of York, in the prevailing style; the same was at this time being effected at Woreester, Salisbury, and other cathedrals and abbey churches. In the reign of Henry's son, Edward I. (1272), the architecture of this country, through the ingenuity, industry, and talent of its professors acquired a new character; the first and distinguishing feature being the general adoption of the well-proportioned and aspiring arch. The arches of the latter end of the thirteenth century generally approached the perfect proportion; besides this, they were ornamented with trefoils, cinquefoils, &c. In like manner the canopies over the arches were adorned with foliage, from the corbel on which they rested, up to the rich flower or elaborate finial in which they terminated. Pinnacles, hitherto rare, were now placed at the side of almost every arch, and on the top of every buttress, surmounted with rich finials. A pinnacle of proper size being placed on a tower, instead of a buttress, became a spire; hence the introduction almost generally in the fourteenth century. We have instances of these improvements, or, rather, the new pointed style, in the three remaining architectural crosses of Edward I., Northampton, Grodington, and Waltham, to the memory of Queen Eleanor.

But the most complete specimen of the whole detail of these improvements is York Minster, the nave of which, as it stands, was built between the years 1290 and 1330. Who is there that can approach its environs, beholding its towers preeminent, its numerous crocketed pinnacles, displaying at once intricacy, variety, and picturesque beauty, towering, like a noble forest tree, amidst a shrubbery from every avenue, or like a mountain starting from its plain, thus attracting the attention and admiration of a spectator; whilst its own vastness and beauty inspire its beholder with awe and sublimity: if any similar structure, but upon a smaller scale, could, in its time, have vied with this in beauty and grandeur, it was St. Stephen's Chapel, which Edward the Third began in 1348.

There are few, if any, of our cathedrals, or remaining abbey churches, which were not rebuilt or restored in some considerable part in this improved style; the taste for these improvements descending even to the parish churches. The human art, like the human body, when it has attained the perfection of its state, tends to decline. So with the rise, progress, and decline of pointed architecture, occupying little more than four centuries: as its perfection consisted in the due elevation of the arch, so its depression commenced its decline.

The new style took place in the fifteenth century, and exhibits its examples in the royal chapels: St. George's, Windsor; King's College, Cambridge; and Henry the Seventh's, Westminster. It cannot be denied, that the architects of these splendid and justly admired structures displayed more art and more professional science than even their predecessors; but at the expense of the style itself which they cultivated, and of the awful and devout impressions which this style was intended to excite. Hence, ingenuity was at this period much more courted than the beautiful and sublime; hence those royal chapels, those mortuary ones of Winchester, Peterborough, and others during the time of the two last Henrys, are ever- covered with tracery loaded in their groins, figures, armorial bearings, beyond all due proportions; so that, however elegant the design and exquisite the execution, a judicious spectator, after admiring them, fails not to prefer to them the chaste grandeur of York

Minster, or even the unadorned majesty of Salisbury Cathedral; and, on crossing the threshold of their portals, enters with mingled emotions of religious awe and devotion, pondering in silent admiration, until his vacant gaze, hitherto flashing from spot to spot, alights, perhaps, on the humble trefoil.

To the Gothic architects, we can refer with satisfaction, as combining every essential for the due advancement of their art: in them was united the man of practice and the man of theory; we beheld in their works a lightness, an art, boldness of execution, which clearly proves that neither the singly practical, or theoretical, architect will ever exhibit to the mind a pleasing object for its contemplation, unless the union of the two becomes apparent to the imagination by the working of its effects.

England, perhaps, exhibits more examples than any other nation of these qualifications, equally admirable for the art with which they are executed, and the taste and ingenuity with which they are composed. I cannot here refrain from expressing a feeling of regret, that these structures are not more considered, better understood, and held in higher estimation, and more encouragement given to our antiquarians in that particular branch to undertake a correct publication of our ecclesiastical and domestic architecture, before ruin spreads its extending mantle, and preserve to future times the remembrance of an extraordinary style, now fast sinking into oblivion; at the same time publishing to the world the riches of a great nation in the splendour of her ancient structures, and render a real service to the art of design.

The importance of architecture, as one of the fine arts, is, indeed, a question which must draw an affirmative response from the generous hearts of all classes, ere a nation may wear that high intellectual honour which the production of masterpieces has ever conferred. Of the esteem in which both the arts and artists were held by Greece, and subsequently by the more polished state of Europe, we cannot be too mindful: both Greece and Rome had the same object in view.

It will be conceded as an undeniable fact, that Greece was in every essential virtue superior to Rome. Whether the cultivation of the arts by the former was rather among the consequences or causes of her political or moral state, is an interesting subject of enquiry. It is not the lore of isolated individuals that can induce the arts to smile upon a country; the exertions of talented professors, who breathe not the atmosphere of general appreciation, will never confer the renown upon their nation; reciprocal honours must first pass between that nation and themselves. It is not enough for a Wren or a Jones to exhibit their transcending capabilities, while the apathy of the public suffers the one to die in poverty, the other in wretchedness, and yet presumes to claim the honour of the production of such men, —

> "With fulsome epitaph insult his grave,
> And eulogise the man we could not save."

Of the public encouragement of architecture, it is to be lamented very feeble hopes can yet be entertained, as, notwithstanding the general opulence of the nation, where thousands and tens of thousands are daily squandered away with senseless prodigality, yet, with respect to the fine arts, the public liberality has yet been seen only to extend to a mere exhibition, a foundation certainly too weak to sustain any edifice creditable to the national taste or genius. Can we hope for better times, or anticipate a new era in our ecclesiastical architecture? The appeal in its behalf has been responded to by a generous public of an opulent nation in a way gratifying to the most sanguine: but does it augur that those who cater for the public taste will evince that knowledge of its art, or cause its hitherto blemishes to be buried in oblivion, and adorn this vast metropolis and its spreading environs with works worthy of its greatness?

That the professors of this truly interesting art have hitherto evinced some little apathy in its developement, must be acknowledged, and that the public were without a means to learn its beauties and gain its acquisitions, will not be denied; but pleasing indeed must be the reflection, to the minds of those who first cast away the lethargy of its members, and founded a society for its diffusion amongst the many,— proud indeed must be their thoughts, as they ponder on its present station amongst the learned and scientific institutions of this important state; and still greater must, indeed, be their emotions when reflecting that it was their endeavours, their exertions, that roused the hoary heads of the profession from their inconceivable coolness, and caused them to 'strain every nerve, and to stretch every sinew, in the formation of an institution for the advancement of an art hitherto left in the hands of the enlightened few.

London, 17. *New Milman Street*, *July*, 1837.

Art. III. *On Cemeteries.* By J. A. Picton, Architect.

" Man is a noble animal, splendid in ashes and pompous in the grave; solemnising nativities and deaths with equal lustre, nor omitting ceremonies of bravery in the infamy of his nature." — Sir Thomas Brown.

The public attention has been aroused to some extent, within the last few years, on the subject of the burial of the dead, and certainly not without cause. The evils of the present system of interment in large towns have been repeatedly pointed out, and considerable improvements have taken place; and, perhaps, considering the prejudices which have had to be surmounted, the obstacles thrown in the way by interested parties, and the difficulties of various kinds which have presented themselves, as much may have been accomplished as could reasonably have been expected. Although much remains to be done before anything like perfection can be said to be attained, yet, the tide of public opinion having taken a favourable turn, the guiding and directing hand of taste is alone wanting to change what has hitherto been the disgrace and deformity of our cities, into one of their principal beauties and attractions. To lend a helping hand in the furtherance of a consummation so devoutly to be wished for, and to give a few practical hints on the subject, is the object of the present article.

Various modes have prevailed, in the different ages and countries of the world, as to the disposal of the mortal remains of deceased humanity, according to the different ideas entertained of the relation between the soul and body, and the peculiar notions of a future state of existence. With the exception, however, of the Persian fire-worshippers, their descendants the Parsees of India, and the ancient Egyptians, nearly all nations, of which any historical records remain, have adopted either the plan of simple inhumation or burning. It is true we have accounts of other modes having been practised both in ancient and modern times, such as that of the Ichthyophagi, or fish-eating nations of North Africa, who committed their dead bodies to the sea; and of the

Balearians, who, according to Diodorus, pounded the flesh and bones of their deceased friends, and in this state deposited them in urns; but many of these statements are probably exaggerated, and, if true, the practices alluded to perhaps never prevailed to any great extent.

The earliest method of interment was, undoubtedly, that of burying in the ground. The sentence pronounced on our first parents, "Dust thou art, and unto dust thou shalt return," seems to have been adopted literally by the patriarchs. In the 23d chapter of the Book of Genesis we have a very touching and graphic account of the interment of Sarah, the wife of Abraham, from which we learn that a cave or vault was selected for the purpose in a field surrounded with trees, and that it was situated outside of the city of Hebron or Mamre. Even in this early age, peculiar sanctity seems to have attached to the common burial-place of a family or tribe; for we find the patriarch Jacob, on his death-bed, giving to his sons a strict charge, that "he should be gathered to his people; that he should be buried with his fathers, in the cave of the field of Machpelah, before Mamre," above alluded to. Joseph also took an oath of the children of Israel, that "they should carry up his bones" into the land of Canaan. It is not quite clear whether or not the Jews ever adopted the custom of burning their dead. The men of Jabesh Gilead burned the body of Saul (2 Samuel, xxxi. 12.); but it appears rather to have been done for the purpose of preventing the threatened indignities upon his remains, than from a religious motive, for it was effected in secret, and by night. We are also told of Asa, King of Judah, that "they made a very great burning for him;" but it is evident that his body was not consumed, for it is expressly stated that it was embalmed and buried in the city of David.*

Amongst the Greeks, the custom of burning the dead was nearly, if not quite, universal. The ashes were collected with pious care into an urn, which was deposited in a tomb, sometimes a family vault, with a monument erected over it to the memory of the deceased. Every classical reader will remember the description of the funeral pile of Patroclus, in the 23d book of the *Iliad*: —

> ——" Those deputed to inter the slain
> Heap with a rising pyramid the plain.
> A hundred feet in length, a hundred wide,
> The growing structure spreads on every side.
> High on the top the manly corse they lay,
> And well-fed sheep and sable oxen slay.
> Achilles cover'd with their fat the dead,
> And the piled victims round the body spread."

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* The curious reader may find other allusions to the same subject in 2 Chron. xxi. 19.; Amos, vi. 10., ii. 1.; 2 Kings, xxiii. 16.

According to the poet, the ashes were placed in a golden vase, with a mound of earth, or barrow, heaped over it for a memorial.

In the earliest ages of Rome, simple interment was the prevalent mode; the practice of burning was introduced probably from Greece. For some time either mode was adopted indifferently; but, at length, incremation became the universal practice, and was only discontinued with the spread of Christianity. But, whichever mode was the one in use, we find it a custom of all but universal adoption that the dead bodies or ashes were interred outside the city walls, and generally near the highways, where their monuments naturally fell under the observation of travellers. Hence the inscription, "*Siste*, *Viator*," so absurdly retained almost to the present day. The laws of the Twelve Tables strictly prohibited any human body being either burned or buried within the city. This law was sometimes violated; but the instances are extremely rare, and generally occurred in the case of persons of great popularity and celebrity. No religion of ancient times, either Jewish or pagan, sanctioned the modern usage of interment in or near the temples and places of worship: indeed, the presence of a dead body was considered as pollution within the sacred precincts. This is probably the cause, also, of the prohibition to inter within the city walls, though it has generally been attributed to a very different cause, the care for the health of the inhabitants; but many of the other customs of antiquity preclude the supposition that the public health was ever attended to on such philosophic principles.

As Christianity made progress in the Roman empire, the custom of burning the dead gradually fell into disuse, whilst the plan of interment in or near the churches by slow degrees gained ground. One reason for this may be found in the far nobler and more elevating views of a future state developed by the Christian religion, particularly in the doctrine of the final resurrection. Whilst the superstitions of the people, and the doctrines of the philosophers of Greece and Rome, equally held that death, as far as the body was concerned, was its final destruction, the Christians considered the interment of the body as a mere temporary commingling with its kindred dust, until that period to which they looked forward with joyful anticipation as near at hand, when "the trumpet shall sound, and the dead shall be raised incorruptible." Other causes also conspired to produce the change. The deaths of the early saints and martyrs were closely identified with the religion and doctrines for which they suffered.

Their bodies were, therefore, either interred, in the first instance, in the places they had honoured during life, that the survivors might have their example constantly recalled to their memory; or, after the establishment of Christianity, sumptuous buildings were erected over their remains, which were considered as communicating a peculiar sanctity to the surrounding neighbourhood. By degrees the clergy, then the kings and nobles, began to claim the privilege of depositing their bones under the protection of the sainted relics. In the first instance, however, the ground around the sacred building was considered sufficient. The Emperor Constantine was interred in the church porch; and it was not until several centuries after the first commencement of the practice, that dead bodies, except those of reputed saints, were allowed interment within the walls.

Thus, then, the present mode of interment derived its origin: how it has gradually degenerated into the abuses so prevalent in our large towns at the present day, it is unnecessary to discuss. We pride ourselves on our civilisation and refinement, on our feeling for the pathetic and tender, our taste for the beautiful and sublime; and yet we give a deliberate sanction to a system which outrages every feeling of decency, which rudely tears away those chords which thrill with a pensive and melancholy pleasure in association with the memory of a departed friend. The Indian warrior holds sacred the tombs of his forefathers; he can thread his way through pathless woods and trackless wilds to pay an annual visit to commune with the spirits of the departed, and to deck their graves with flowers; but, in England, the centre of civilisation, it is given in evidence before a committee of the House of Commons, that many tons of human bones have been annually exported from London, to be crushed in mills, and used as manure; that, in many instances, one corpse has to be taken up to make room for another. Well and truly has it been said: "It seems as if poetical custom always shuns the walks of cultivated society. In proportion as people grow polite, they cease to be poetical." Better, far better, would it be to revert to the ancient custom of incremation, than to continue the present loathsome practices; for, in the nervous language of the writer quoted at the head of this article, "To be knaved out of our graves, to have our skulls made drinking bowls, and our bones turned into pipes, to delight and sport our enemies, are tragical abominations escaped in burning burials."

But we rejoice at length to see the dawn of a better system. In Liverpool, Manchester, Birmingham, and most of our large towns, cemeteries of a superior character have been opened, with eminent success; and even in London, where, perhaps, greater obstacles exist than elsewhere, owing to the difficulty of obtaining land within a reasonable distance, something has been effected, and more is in progress.

Whatever may be our views of death and a future state in the abstract, our feelings and sensations on the subject are influenced to a very considerable extent by association. Hitherto, with very few exceptions, these associations have been of the most gloomy and terrific description: —

> —— "The Grave! dread thing,
> Men shiver when thou 'rt named; Nature, appall'd,
> Shakes off her wonted firmness. Ah! how dark
> The long extended realms and rueful wastes,
> Where nought but silence reigns, and night, dark night!
> . . . . . . The sickly taper,
> By glimmering through thy low-brow'd mirky vaults,
> Furr'd round with misty damps and ropy slime,
> Lets fall a supernumerary horror,
> And only serves to make thy night more irksome."

But, to use the words of an elegant modern writer (Washington Irving), "Why should we thus seek to clothe death with unnecessary terrors, and to spread horrors around the tomb of those we love? The grave should be surrounded by every thing that might inspire tenderness and veneration for the dead, or that might win the living to virtue. It is the place, not of disgust and dismay, but of sorrow and meditation."

Let us be careful, however, in our anxiety to escape from gloom and horror, not to run into the opposite extreme of meretricious gaudiness. Death and the grave are solemn and awful realities; they speak with a powerful and intelligible voice to the heart of every spectator, as being the common lot of all, the gate of access to another state of existence through which all must pass. To say nothing of the bad taste, therefore, anything obtrusively picturesque, anything savouring of fashionable prettiness, any far-fetched conceits or tortured allegories, jar upon the feelings of any well-regulated mind, and excite ideas the very opposite to those of sympathy and tenderness. Our cemeteries, then, should bear a solemn and soothing character, equally remote from fanatical gloom and conceited affectation. There are many of our country churchyards, which might furnish models in this respect, as far as calm serenity and quiet beauty go; where the "rugged elms" and "yew tree's shade," coupled with the "ivy-mantled tower," with which they are connected, give an air of time-honoured sanctity to the scene: but this is generally owing to adventitious circumstances, and accidental locality. I have at this moment one or two churchyards of this character before my mind's eye, seated deep in the recesses of venerable woods, by which they are surrounded and shut out, as it were, from the every-day world, where no sound reaches the ear, but the low murmur of the wind through the summer leaves, or the sighing of the storm through the wintry branches, realising, if any situation could do so, the description of the poet: —

> "There is a calm for those that weep,
> A rest for weary pilgrims found:
> They softly lie and sweetly sleep
> Low in the ground."

Advantages of this description are not often to be commanded in the neighbourhood of large towns; but, even here, a little care and attention, by eagerly seizing and turning to account any advantage which presents itself, may give a pleasing tone to a surface of the commonest description, and stamp a character of chaste elegance on the most suburban situation.

In selecting a piece of ground for a cemetery, the nature of the soil, and the aspect, should first be considered. A firm sand, or loose light rock, is the best adapted for the purpose; a gravelly soil, or any other stratum permeable to water, will answer tolerably well; but a stiff loam, or tenacious clay, is of all soils to be avoided, as it is hardly possible effectually to drain it, and the presence of water is for many reasons objectionable. If the surface of the ground should have a slope to the south or south-west, so much the better, as it will tend to improve the cheerfulness of the aspect, and the dryness of the surface. Unless the ground be very extensive, it is desirable that the slope should be from the entrance, as the interments generally commence at the farthest end, and sometimes inconvenience is sustained by walking down the hill. St. James's Cemetery, Liverpool, in the centre of which Mr. Huskisson lies interred, was constructed on the site of an old stone quarry. On a projecting fragment of the rock, hewn perpendicularly on two sides, stands the chapel; whilst a tunnel, excavated in the rock, affords access to the burial-ground below. In various places, where the face of the rock is scarped down perpendicularly, catacombs are excavated. In others, where the nature of the ground admitted it, the surface has been covered with soil, where a flourishing plantation of trees has already attained considerable luxuriance. In this way, by taking advantage of local circumstances, almost any piece of ground, however unpromising, may be rendered at least pleasing, if not tasteful and elegant.

The style of the buildings, enclosures, entrance-gates, &c., should bear some analogy or reference to the objects and purposes of the structure, or, at all events, the ideas excited should not be adverse to them. The Egyptian style, from its massive breadth and colossal proportions, has sometimes been adopted for mausoleums, and, I believe, occasionally for buildings connected with enclosed cemeteries, probably on account of the ideas of duration and strength which naturally connect themselves with the Egyptian remains. Most of the cemeteries, however, which have recently been constructed have their attached buildings in the classical style. As to the intrinsic beauty of Grecian architecture, there can be but one opinion, neither is it probable that the great mass of mankind attach to it any definite ideas as to its origin; still, as the beauty of all architectural forms is to a great degree conventional, the appreciation of their excellence must depend on the previous cultivation of the taste, and the direction and bias which it has received. Every mind of common cultivation, when certain analogies or discrepancies are pointed out, can immediately appreciate them, and derive pleasure, or the reverse, from their perception. Now, there is no analogy between the classical style of architecture, and the objects of a Christian burial-place. As a mere matter of convenience, and as presenting pleasing forms to the eye, it gives satisfaction to the great majority, who look not below the surface. But, if consistency and keeping are desirable, if a picture complete in all its parts be wished for, something further is required. It is this mutual support and pleasure which the perceptive faculties, the imagination and the judgment, mutually afford, which constitute what may be termed the poetry of the art, the highest degree of pleasure from that source of which the human mind is capable. There are some excellent observations, so applicable to the present subject, in an article from the *North American Review*, inserted in the January Number of this Magazine, that I cannot forbear quoting them:—"There is certainly no place, not even the church itself, where it is more desirable that our religion should be present to the mind, than the cemetery; which must be regarded either as the end of all things, the last, melancholy, hopeless resort of perishing humanity, the sad and fearful portion of man, which is to involve body and soul alike in endless night; or, on the other hand, as the gateway to a glorious immortality, the passage to a brighter world, whose splendours beam even upon the dark chambers of the tomb. It is from the very brink of the grave, where rest in eternal sleep the mortal remains of those whom we have best loved, that Christianity speaks to us in its most triumphant soul-exalting words of victory over death, and of a life to come. Surely, then, all that man places over the tomb should, in a measure, speak the same language. The monuments of the burial-ground should remind us that this is not our final abode; they should, as far as possible, recall to us the consolations and promises of our religion.

"But there is a style of architecture which belongs peculiarly to Christianity, and owes its existence even to this religion; whose very ornaments remind one of the joys of a life beyond the grave; whose lofty vaults and arches are crowded with the forms of prophets, and martyrs, and beatified spirits, and seem to resound with the choral hymns of angels and archangels. But peculiarly are its power and sublimity displayed in the monuments it rears over the tomb. The elevated form on which reposes the statue of the mailed knight, or the holy woman, composed into the stately rest of the grave, yet the hands folded over the breast, as if commending the spirit to God, who gave it; the canopy which overhangs it; the solemn vault that rises above; the gorgeous window, through which is poured a flood of golden light upon the abode of the dead; these are the characteristics of the architecture of Christianity, the sublime, the glorious Gothic."

In respect to association, this writer remarks that, "although there may be no preference existing previously in the minds of the community for one style or another, yet it is well to cultivate a preference for the Gothic style, since it is a fact, which nothing can alter, that this is Christian architecture, and the classical and Egyptian belong equally to paganism. It is desirable that those who visit the graves of their friends should associate with the spot the monuments and decorations which their religion has consecrated for a thousand years."

Most of the proprietary cemeteries recently established are of considerable extent; but, in carrying out the principles laid down above, this is not at all essential. Any piece of ground, three acres or upwards in size, is amply sufficient to afford room for the following subdivisions, which will be found in all cases necessary.

1. A portion allotted for single interments, where the right of ground is not conveyed. The graves, in such cases, are usually closed finally when a certain number of bodies have been interred.

2. An allotment for family graves, of the ordinary size (say 6 ft. by 3 ft.), where the right of ground is purchased, subject to certain regulations as to head-stones and monuments.

3. A space for family vaults. These are constructed of various sizes, but should not be less than 7 ft. by 4 ft. inside; the walls built with brick, and covered with large stones. The bodies, in this case, must, of course, be interred in lead coffins. A covered cloister or open colonnade is extremely desirable, affording a cool sheltered walk, with space for vaults below; the walls to be appropriated to tablets and monuments.

Cemeteries, embracing the above-mentioned arrangements, and tastefully laid out, will not only be found beautiful and valuable appendages to every town of moderate population, but offer a very advantageous investment for capital. This, even on a grave subject like the present, in this money-making and speculative generation, is not the least important part of the information. It has come within my own knowledge, that one

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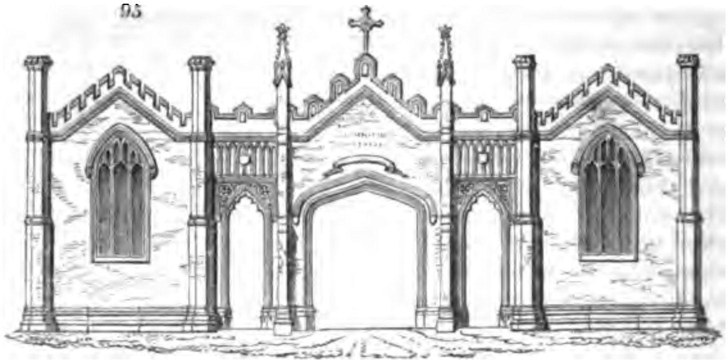

Front Entrance of St. Mary's Cemetery, Kirkdale.

of the first cemeteries established on the proprietary principle has for several years paid an annual dividend to its shareholders of from 20 to 25 per cent. If, therefore, three most important objects can be attained at once, the decent and respectful disposal which the mouldering relics of departed humanity require at our hands, the providing of a pleasing resort for meditative contemplation for the living, and the profitable employment of pecuniary means for the purpose, surely the time is not far distant when every large town will have at least one or two establishments of this kind in its environs.

One word in reference to the style of monuments. Notwithstanding the decided preference, for the reasons above stated, given to the Gothic style, as peculiarly suited to sepulchral architecture, we would by no means place the monuments under the same restriction: indeed, we would give the most latitudinarian scope in this respect. It is in these memorials that individual tastes, feelings, habits, and propensities are developed, and afford ample food for meditation to the most unimaginative mind. In this point of view, they are, indeed, "instructive records, whereof those marked with least incident are yet replete with interest for that human being who stands alone amongst the quiet graves, musing on the mystery of his own existence, and on the past and present state of those poor relics of mortality, which every where surround him, mouldering beneath his feet." (*Chapters on Churchyards.*) We would only make one stipulation, that they should not be cooped up within a fence of iron rails. To go into some of our public cemeteries, and look at each little plot of ground, 6 ft. by 3 ft., with its chevaux de frise of iron spikes frowning defiance on every beholder, it would almost appear as if every inhabitant of the narrow "house appointed for all living" were apprehensive of a siege, and viewed every spectator as an enemy. The inscriptions on monuments usually appeal to the finer feelings and tender sym-

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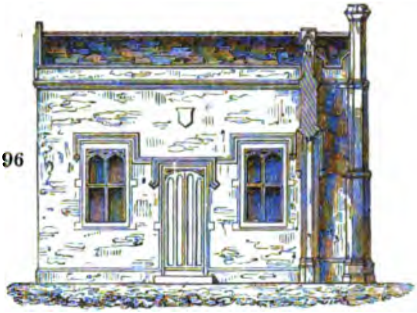

Entrance Front of the Chapel.

pathies of the reader; but this plan savours of distrust and suspicion, and at once tends to close every avenue to the heart, and to destroy every thing like sympathy and kindliness of feeling. It is only allowable in such churchyards as are public thoroughfares, and exposed to the dilapidating freaks of idle schoolboys; but in cemeteries such as are alluded to above, this *Noli me tangere* air is very offensive, and calls up associations of the most unromantic character, such as those of steel traps and spring guns, the bars of a prison, and ideas of a similar class.

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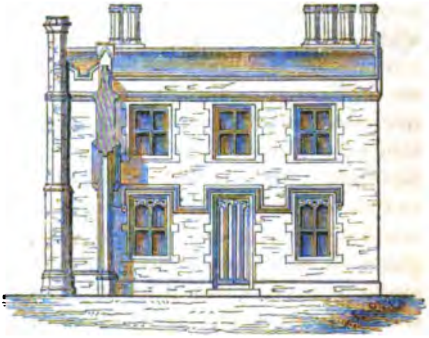
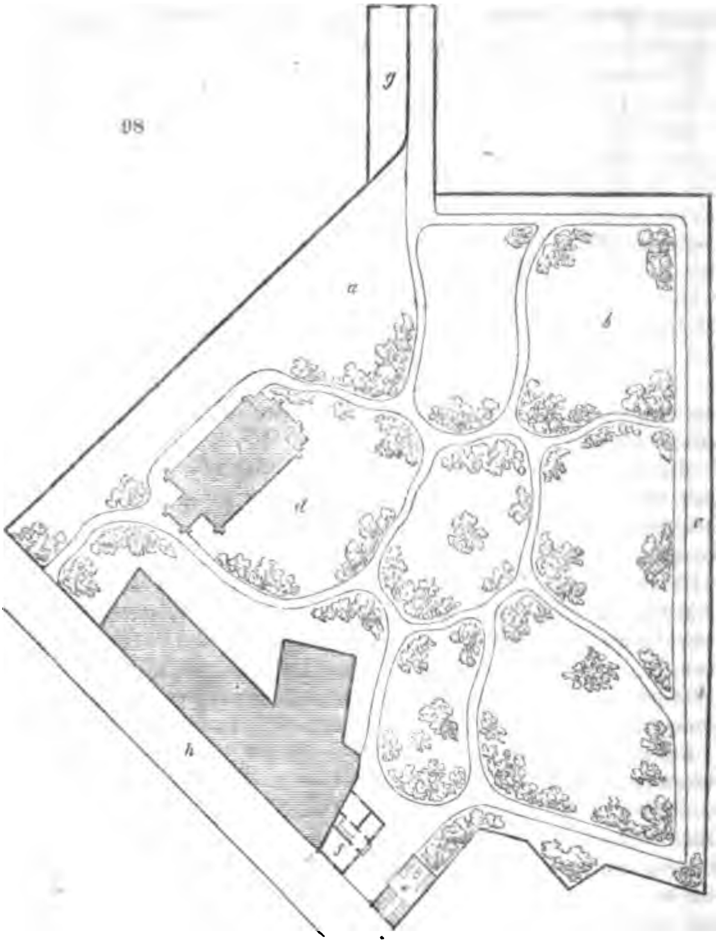


Entrance Front of the Dwelling-House.

But my readers will expect something in the way of illustration of the above remarks; and I now proceed to offer something of the kind. I do not for one moment pretend to have realised the ideal excellence above attempted to be shadowed forth; but, at all events, it will be a hint for something better, and on a more extended scale. The accompanying figures represent the mode of laying out, and the design of the entrance and buildings, of St. Mary's Cemetery, in Kirkdale, one of the suburbs of Liverpool, designed and carried into effect under the superintendence of the writer. *Fig.* 98. represents the plan. The quantity of land is nearly four acres. The shape is extremely irregular, and in part surrounded by buildings; but the mode of laying it out will be sufficiently obvious from the plan. The ground slopes from the entrance, and faces the west. The nature of the soil is a loose rock. *a* represents the portion appropriated to single interments; *b*, the space for the family graves; the space *c c*, along the wall, is allotted for vaults, part of which are proposed to be covered with a colonnade, or cloister; *d* indicates St. Mary's Church, the erection of which first gave the idea of establishing the cemetery; though, as the ground is not consecrated, the church is in no way connected with it. (Since the plan was made, the ground round the church has been separated from the cemetery, but it in no respect alters the general plan.) *e* is the chapel for performin

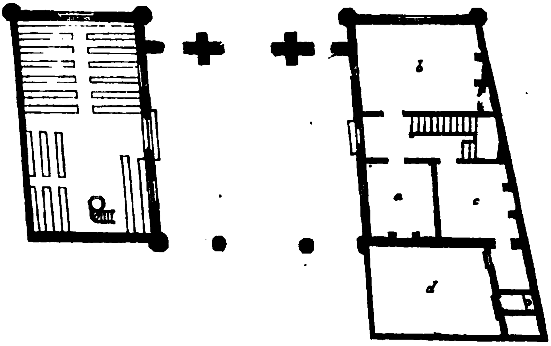


a, The portion appropriated to single interments. *b*, The space for family graves.
c, The space for vaults. *d*, St. Mary's Church. *e*, Chapel for performing the burial service.
f, House for the officiating minister. *g*, Yard for working the tombstones.
h, High road from Liverpool.

the burial service; *f*, the house for the officiating minister (both of these are shown on a large scale in *fig.* 99.); *g*, the yard for working the tombstones, and the back entrance. *Fig.* 95. shows the front entrance, with the chapel on one side, and the dwelling-house on the other. In the centre, over the gateway, is the following inscription, carved in black letter, with a scroll: —

"ST. MARY'S CEMETERY.
A. D. MDCCCXXXVI.
MORS JANUA VITÆ."

Fig. 96. is the entrance front of the chapel, laterally to the gateway. *Fig.* 97., the corresponding front of the dwelling-house.



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a, Study. *b*, Dining-room.
c, Kitchen, communicating through a back kitchen to the yard (*d*).

The entrance front is of stone, and the lateral fronts of brick, with stone jambs and facings. The shields, in various parts, are emblazoned with the heraldic bearings of the parties connected with the undertaking. The ceiling of the chapel has oak ribs with carved bosses at the intersections; and the ends of the seats are carved with *fleurs de lis*.

It is much to be hoped that the Gothic architecture, from its graceful flexibility as a style, and the exciting associations connected with it, will be frequently adopted for this purpose by our architects; and that our cemeteries will, ere long, take the rank to which they are well entitled, as not the least important or ornamental portion of our public edifices.

Before I conclude, I would just add, for fear of misconception, that none of the above remarks can be at all intended to apply to such places of interment as Westminster Abbey, St. Paul's, and other of our cathedral and collegiate churches, which are, indeed, magnificent places of sepulture, worthy of containing the ashes of England's best and bravest children, and which will call up feelings of glowing warmth and veneration,

> ——" While yet a nook is left
> Where English minds and manners may be found."

The remarks are only intended to apply to the indiscriminate and wholesale system of pollution and barbarism, which cannot be too strongly reprobated, nor too soon remedied.

Art. IV. *Thoughts on the present System of Competitions.* By Eder.

Competitions being a mode frequently adopted for procuring the best designs for public and other works, it may not be deemed unimportant, now that so much is going forward this way, to say a few words upon the system, by way of hint to those young professional men whose spurs have yet to be won, but who are so ready to embark in every competition; and of instruction to those "grave and reverend signors," the Committees of Taste, Church Commissioners, *et hoc genus omne*, who have to decide on their claims. It may, also, not be entirely out of place to address a few words to that good easy gentleman the "Public," who is the first to vomit forth his "sound and fury signifying nothing" at the want of excellence in anything; and the last to arrive at the real merits of a case, unless it be pointed out by some "Goliath," whom he deems of sufficient importance to render his opinion respectable, when, indeed, it must be owned he is sufficiently positive as to the perfection of the plan, and clamorously desirous to have it carried into effect. Few, I think, who thoroughly and impartially examine the matter, will deny that a public competition is the mode preeminently adapted for procuring the best design, and that one which shall most effectually unite within itself excellence of arrangement with beauty of exterior; of which last alone the judges, however unskilled in professional matters they may be, are certainly capable of forming a tolerably competent opinion; though it must be confessed that we have no positive proof of this, as nothing can be more tasteless, even in outward appearance, than the selections often made from among numerous and very clever designs. But some experienced competitor will reply, "Do you not know that, in nineteen cases out of twenty, a competition is a mere job, and that a thousand circumstances operate respecting the choice of a design, before its own intrinsic excellence is even thought of?" This must be admitted, however incredible it may seem that private gain should be allowed to take such precedence of public weal. "But," again may ask one of the crowd, who has never been admitted behind the curtain in these things, "how do you know that such is the case?" To this I can only reply, that "facts are stubborn things." Innumerable instances might be adduced; in short, it would be uttering truisms to a professional man to name them: but the public at large is not quite so well informed in the matter. A certain public building, recently finished, at Islington, was gained at a competition, where it was expressly stipulated the designs were to be tinted in sepia only, by a set of designs which, in direct opposition to the instructions given by the committee, were beautifully coloured according to nature. Here was a manifest injustice done to the other competitors: for it is well known how much adventitious merit a design gains by artist-like finishings in colour, and that an effect is obtained by this means which does not belong to the edifice itself.

Designs are often chosen in such a state of incompleteness, that to make them out would be as difficult as to unriddle the enigmas of the ancient Sphinx. Take, as an instance, the design for the Berkshire Hospital, mentioned by a correspondent of your Magazine for March, p. 151., which gained the second premium. According to the plan delivered in, this building could contain but forty-eight beds, although sixty were stipulated for; and this alone, in common fairness, should have operated against its choice: but it did not; neither did the circumstance of parts of it being coloured in neutral tint, when it was directed that the whole should be in sepia, nor those of its bath-room being only 3 ft. wide, and its principal staircase 4 ft. 3 in. only in breadth, operate against it. Added to this, will it be believed that there were no sections accompanying this design, and that thus there was nothing to show its capability of being executed, or to afford means by which an estimate of its expense might be made? This, indeed, the architect himself did not deign to attempt, though expressly directed to do so.

It was not many months since, that advertisements were put forth in the daily papers for a building connected with a railway, with directions where to apply for particulars, &c.; but, after about five weeks had elapsed, circulars were sent to the competing architects, to say that they need trouble themselves no further, as it had been resolved to give the work to Mr. Hardwick. Here was deliberate insult added to positive injury and loss. So, after the five weeks' labour and unavoidable expense of, perhaps, twenty architects, they were to be coolly told they might go about their business, and all this without any remuneration, or hope of remuneration, whatever. The writer of this was once engaged in a competition for a town hall; when, after a fortnight had elapsed after the designs had been sent in, all the designs, except his and one other, were returned to the unsuccessful candidates, as the committee were as yet uncertain which to choose of the two remaining ones. Three months elapsed, and the writer sent, requesting to know the result, but was again told the committee had not yet decided. Another month went by, and he again wrote; when, after some further time, his drawings were returned, torn and dirty, with a note three lines in length, and after five months' detention. The reason alleged in favour of the design of the successful candidate was its being much more ornamental; but the committee itself acknowledged it would cost nearly double the amount specified, and admitted that the second best would not have exceeded the sum stipulated. Thus the writer lost, for adhering to their own regulations; when, had he exceeded the given amount, and so put himself upon a par with his rival, and neglected their instructions, by making a more costly edifice, his chances of success would have been greater; whilst the successful candidate gained by disregarding their own orders.

How often, before a competition is decided, do we hear even the name of the person who is to have it! Is all this equitable? Can such a system be permitted to prevail? Competitions are, above all things, calculated to bring forth latent talent, to teach young beginners confidence, to bring into play their incipient powers of conception, and to improve and mature their judgment by giving them an opportunity of designing larger buildings than in the common course of events they could expect, until of riper years. Had competitions taken place for Buckingham Palace or the National Gallery, would the present edifices have been raised, and would such burlesque travesties upon architecture have been allowed to become indurated masses of sad reality, to descend to posterity as monuments of the taste of the nineteenth century? How justly did the poet speak, who said that many "mute inglorious Miltons" were hidden in the mist of obscurity, when opportunity might have shown forth their genius to mankind! In architecture, competitions afford that opportunity; and many architectural Miltons may yet be expected to arise when the system is improved, but not before. However it may be regretted, is it to be wondered at, that this noble art has drooped its head, when so many things combine against it? When our Royal Academy scarcely admits its members within their walls; when our universities and public schools are ignorant of it; when no schools of design of any kind have ever been instituted, no public or private sympathy shown for it, and no means whatever taken to bestow on it a fostering hand; can it be wondered at, not only that it does not live, as it deserves, in all its glory, but that it can barely be said to exist? But, without thinking of all this, not only do pseudo-connoisseurs, litterati, dilettanti, and antiquarians complain of the degradation of the art, but every superficial thinker flings his flippant jest, or his pointless sarcasm, at the architecture of the present day, and calls it wit. Go ye to the land of the Cæsars, and there see how an Augustus promoted it, and how thoroughly a whole people were imbued with the spirit of the art! Recall the times when Adrian delighted to assume to himself the *then* honoured name of architect, and personally to undertake all its onerous offices. Look around, and remember Pericles, who, when some political malecontents murmured at the expenses incurred by the erection of so many public buildings, offered himself to bear the expense, provided he had the honour of its being published that he had done so; when the whole people, animated with one fervid feeling of injured pride, energetically refused, and their murmurs died away into silent admiration. Of what avail would it be to tell of this to the crowd who lately figured before the hustings in Covent Garden Market, or of the glories of the Parthenon, of temples, baths, and stadia, of the Coliseum, of the magnificent Bridge of the Alcantara, of the Vatican, or of any thing else which did not bring in some 7 or 10 per cent for the outlay? But, alas! our people have as yet to be educated for all this. As Prince Talleyrand used to say, "The pear is not yet ripe;" but I trust that we are now at last approaching this "consummation," that we are, to use another of his happy illustrations, arrived at "*le commencement de la fin.*"

When advertisements are put forth for a general competition, a certain period is always allowed to get up the drawings; but, in nine cases out of ten, this period is so inadequately small, that, when it is considered how much is to be done, in designing the elevations, arranging the plans, with all their relative conveniences, working out of the sections, and attending to all the numberless et ceteras belonging to them, it will be found that it is scarcely ever possible to finish them with that quiet care which is so necessary to give them their full effect, or to bestow on them the deep consideration which should attend the designing of a large edifice, within the required time; consequently, inaccuracies must necessarily occur, and other faults in detail, for which the architect is blamed, when the fault rests upon the brief period allowed. So notoriously is this the case, that in the majority of competitions the committee are themselves compelled to grant an extension of time, in consequence of the numerous representations of its inadequacy. A fortnight only is frequently granted, and even, in some cases, a week or ten days. Even the legislature, where all would have expected judgment, reflection, and knowledge of the subject, even the legislature betrays the same ignorance of the details of the art, and of the time necessary, and the deep consideration required in the production of a fine work of architecture. The space of time granted to the competitors for the new Houses of Parliament was *four months*. Shades of Phidias, Ictinus, and Callicrates arise, and blush with shame at such ignorant absurdity! Four months for an edifice, which, as was justly observed by Mr. Britton, is many times larger than St. Paul's, and which required an extent, a vastness, and even grandeur of conception, in the internal arrangement, which to the former was unknown!

The next ordeal competitions have to pass through is the committee. Now, although we do not quarrel with every man because he has not the same knowledge of the subject as ourselves, yet here we must protest against the committee relying solely upon their own judgment of the case. How, let me ask, is it possible that a man, perhaps engaged in business of a totally opposite nature, can perfectly enter into the subject of an architect's plans; comprehend them in all their bearings; enter into the minutiæ of their various parts; weigh the merits of their different modes of arrangement, and the minute shades of difference which exist between them; examine all the sections, the heights, thicknesses, and bearings of the different walls; judge of the strength or propriety of the scientific combinations perceivable in the construction of a roof of large span, and then enter with the true feeling of an artist into the composition of the elevations? We say that, without practice, this is impossible. Not that we wish to have it all our own way, and first to design, and then to judge, our own works. By no means. It will be found that the opinions of enlightened amateurs and men of taste, by being divested of professional prejudices, will materially assist architects in their compositions; but what we protest against is, their pretending to be able to judge of *all* the practical arcana of plans, elevations, and sections, and patiently to go through the dry tiresome details of perhaps fifty designs, each design consisting of from six to ten drawings. A competition, even when divested of jobbing and other sinister influences, must ever be a lottery, from the incompetence generally of those selected to choose; as none but one accustomed to architectural composition, arrangements, and practice can properly appreciate a design, a drawing of which only is submitted, too often brilliantly coloured, in order to dazzle the eye, and so carry away the judgment. It is well known, even when a committee is composed of gentlemen of unblemished probity, that, generally, the design is selected for its exterior; the other drawings, from their numbers, and the irksomeness of detailed examinations, being rapidly passed over. Is this, I ask, encouragement to competitors; or is it likely to raise the art, or procure excellent designs? Here, again, the legislature is in the rear of public opinion: for a few isolated cases have occurred, where architects have been called on to assist in giving judgment in private competitions; but the "heaven-born Commissioners," as Mr. Wilkins pleasantly called those appointed to decide for the new Houses of Parliament, waded, *it is said*, through the ninety-seven designs, containing more than one thousand drawings, without requiring any one's opinion, to know whether a just arrangement of the relative conveniences, a nice balancing of the different supports, or a mutual harmony of the component parts of the elevation had been made. One of the principal commissioners, Sir Edward Cust, thus expresses himself in a letter to Sir Robert Peel: — "I may almost assert, that all the public buildings of the last half century have been behind the average architectural talent of their day; and this, as it appears to me, is manifestly because the employment has been consigned to professional men."

The architectural talent of any particular period is shown by its public buildings, affording, from their magnitude, greater scope for the display of taste than private ones. Sir Edward observes, that "public buildings," which, of course, are the tests of architectural talent, "are behind the average talent of the last half century." This is a solecism I do not comprehend; for how can "public buildings" be behind the "average talent of the last half century," when they alone afford the means of judging of that "talent:" average, of course, meaning the medium of the whole, how can they be behind their own average? As to the utter absurdity of the alleged inferiority (which many, equally acquainted with the subject, will possibly deny) arising from professional men being employed, it is unworthy of contempt. One might as well assert, because a doctor's patient died, that, had a quack, an amateur, or any other non-professional been employed, the patient would have been alive and well.

A committee being formed entirely of non-professional men begets another serious embarrassment; for a design is sometimes chosen for the prettiness arising from a multiplicity of ornament, which, in the end, far exceeds the amount; and thus endless difficulties are superinduced. The Town Hall at Worcester, I am informed, was to have cost 18,000*l.*: 25,000*l.* have been expended, and application has been made for 7000*l.* more. The Town Hall at Birmingham, and many others, afford parallel cases in point. This evil, committees have much brought upon themselves, by naming an inferior sum to the amount intended. This is so notorious, that few architects deem themselves bound by the amount, and therefore give way to additional expense; well knowing, from constant experience, how untrue is the statement of the amount, and generally how utterly incompetent is the sum named to accomplish the desired object. The amount is often so inadequately small, that it would be impossible to execute the work in the plainest manner; and yet the particulars generally state, that the front is to be in a style of "simple elegance;" to be "faced with stone;" to possess a "handsome portico;" or to be "ornamental in its details." We shall see, when the Town Halls at Weymouth and Oxford are executed, how near their respective costs will be to their stipulated amounts of 2500*l.* and 6000*l.* If I be not much mistaken, these amounts will be *a trifle* exceeded. The architect often makes a design in accordance with the instructions put forth; the edifice costs half as much more as the sum named; the committee is astonished, the public dissatisfied; and the onus of the whole is then thrown on the unfortunate architect: but, had professional advice been taken in the first instance, a sufficient sum would be named, and instructions which *might be understood* would be given as to the more important apartments, and their uses. As they are now managed, the instructions are rarely understood; and thus unavoidable errors are fallen into, at once annoying to the architect, and troublesome to those appointed to judge. Here let me whisper, *intermezzo*, a word to architects themselves when they deliver in their drawings; and that is, when the amount stated is insufficient, and your design exceeds it, do not bring down the amount to that named, but boldly state its insufficiency, and add about what you think really would be the sum required. If the design has real merit, small sacrifices would always be made, rather than lose a really good thing. Never let it be said, "This man began to build, and was not able to finish;" and let the younger members of the profession bear in mind the French proverb, "*Chacun est artisan de sa fortune*," and that nothing will estrange men more than reckless expenditure. It touches every man in his tenderest part — his pocket. Stating a lower sum than you know will be required, is a means of obtaining an end, unworthy the dignity of the profession, degrading to the professor, and derogatory to all parties. Whether the estimate for rebuilding the Houses of Parliament may prove one of these miscalculations, *nous verrons*.

As another proof of the incapacity of committees to judge without professional advice (even in those appointed by the legislature, where we might expect the utmost knowledge of the subject and competence of judgment), look to the designs for the Houses of Parliament. That Mr. Barry's elevation, even when divested of its artistical effect, was the best, no unprejudiced man can deny; but here their judgment ended; for, as I before observed, few are capable of judging rightly beyond the elevation who have been unaccustomed to the subject: for the plan, with the exception of one or two bold ideas, was below mediocrity. Now for the other three designs: six or eight could be pointed out better than the best, and double that number better than either of the other two; and such is the nearly universal feeling, not only of the profession, but of the public. And then the Commissioners' sapiency was still further displayed, by their avowed incapacity to discover even one more design worthy of the fifth premium given by government.

The premiums offered to competitors are often so exceedingly small, that few men having any business at all will enter the lists; thus the older and more respectable professors avoid the trial, and the majority of the competitors is often composed of very young men, who have scarcely burst from the trammels of their pupilage, and therefore are not yet in possession of that comprehensiveness of conception which takes in at one view the distant parts, and unite, perhaps, incongruous elements, into one harmonious whole; and thus the body architectural often suffers for the faults of perhaps some of its least competent members.

What, in a few words, we would now recommend, is, first, to procure one or more architects of some standing in the profession to assist committees in their judgment; who would give all necessary particulars to the competitors, and particulars which might be understood, and not the ambiguous unintelligible enigmas which are too often now given; with some idea of what would be required in the edifice, and the destination of its most important parts; thus the competing architects would be better acquainted with the subject, and able to improve upon the instructions. Being also acquainted with the subject, the architects employed to assist the committees would know what period to allow for the getting up of the drawings, &c., and might offer any other recommendations which their experience pointed out as necessary.

Another subject to which I would call attention is that of remuneration. If the successful candidate, from youth, inexperience, or any other cause, be deemed unfit to undertake the execution of the work, let us entreat that the premium be adequate, and not the paltry 10*l.* or 20*l.* so frequently named. No premium, for an edifice costing 8000*l.* or 10,000*l.*, should ever be less than 100*l.*; whilst the second premium might be one moiety of the same; and even a third premium would not, in most cases, be too much. Buildings much under that amount might be rather more in proportion, and those exceeding it rather less. Committees often stipulate, that, if the successful candidate executes the work, the premium shall be withheld; and thus they procure a vast number of designs from the competitors, who thus waste their labour, time, and ideas, without receiving one single shilling in return; and the successful architect has no more than his ordinary remuneration, to make up for the risk of his increased anxiety, lost time, and often great expense, had he been less fortunate. This is a system which cannot be too much deprecated, as being illiberal in the extreme.

After the designs are sent in, let the committee choose a certain number which they themselves most approve of, and then submit them to the professional men for their opinion, as to the excellence of the arrangement, the capability of its being executed for the amount stipulated, the *modus operandi* of the more scientific details, the beauty or propriety of the elevation, and, in short, all the circumstances necessary to form a correct judgment on the part of the committee of the various designs submitted to them. Then each architect of the designs approved of should be publicly examined, the committee being assisted by professional men, as in the case of railways at present; and thus jobbing and such sinister influences would be in great measure avoided, by the openness of the proceedings; and a fair opportunity would be given to each architect to explain the principles which governed him in his compositions, and to display the merits of his plans. The choice, after this examination should then rest with the commissioners. And here the professional advice should terminate, as nothing could be more galling to the feelings of an architect having to execute his design, than the superintendence of another, whose taste, as to ornamental, or prejudices as to scientific, details, might differ, and who could not possibly fully enter into the *animus* of another's feelings.

I have now, I believe, brought forward the principal difficulties that architects have to contend against in competitions, and suggested a few ideas, by which, or similar ones, they may be in some degree remedied. Objections have been raised by some to open competitions, as preventing the older members of the profession from entering the lists; and futile ones they are indeed. The objections of those modest elders will be found, I think, to arise more from alarm lest some younger member, some individual whose name has never been heard of, should carry away the prize, and thereby cast an apparent slur upon them for losing it; or, haply, they deem it beneath their dignity to be seen trying at every competition that turns up. But did such ideas as these occupy the minds of the competitors for the *façade* of St. Giovanni Laterano; or of the Roman architects when St. Peter's was about to be built, and Bramante bore away the noble prize? Or did they deter the ambitious aspirants for the dome of Santa Maria del Fiore, when Brunelleschi wreathed his brows with victory, and raised that stupendous monument of architectural skill and beauty into the air? Such thoughts did not for an instant clog their free spirits: they knew, indeed, that where there were many rivals but one could win; but that, whilst it rendered the triumph of success much greater, made the mortification of losing much the less; and they went away rejoicing, like the Spartan of old, "that there were better men than they." Such were indeed honourable feelings; alike honourable to the architects themselves, to the patrons of their art, and to their country at large. That such may soon be the feelings of this country, is the fervent prayer of an humble but devoted follower of this noble art, the parent of the others, the promoter of civilisation, and the glory of ancient days.

Brixton, June 20. 1837.

ART. V. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Jun. Essay IX. *Relative to the Architecture of Churches and Cathedrals.*

KING'S College Chapel, Cambridge.— This structure, which is the most magnificent of its kind, is the next to be taken into consideration. With all its beauty, with all its superb sculpture and roof, and with all its sublimity, it is really a simple building, being in form a parallelogram, whose two side walls support a strong roof. Now, the objects of enquiry are, first, the dimensions and proportions of the stone roof; next, the side walls, and buttresses supporting the same.

The annexed plan (*fig.* 100.), which has been derived from the plans and drawings of Mr. Britton, to whom every lover of church and cathedral architecture is greatly indebted, gives a vertical section of the building, at right angles to the sides. The particulars of the dimensions are as follows: —

The span between the wall piers is 43 ft. The height of the wall to the springing is 64 ft. The thickness of the wall pier, at *x*, is 9 ft. The width of the pier is 4 ft. The thickness of the voussoirs and masonry of the arches, every thing included, varies from 4 in. to 6 in. between the ribs, and from 18 in. to 4 ft. at the other parts. The arch of the roof is of the elliptic form, and is supported by buttresses; consequently, the proportions and calculations, as respects *one sixth*, are here inapplicable. The buttresses being all similar and equal, any one of them will be sufficient for examination.

The thickness and height of one of these buttresses, at each set off, beginning from the springing of the arch, are as follows and the dimensions are compared with those of the buttress represented by fig. 76. Vol. III. p. 211.: —

Buttress of King's College.		*Buttress shown by fig.* 76. Vol. III. p. 211.	
Thickness.	Height.	Thickness.	Height.
9 ft.	4 ft.	— ft.	— ft.
13	20	4	3
17	20	6	6
21	20	8	12

The above shows that these two buttresses differ.

In order to try the result of experiment, a model was made, on the scale of half an inch to a foot, of the chapel buttress, omitting, however, the lower part, *c d* in the diagram, when the proportions became as follows: —

Thickness.	Height.	Remarks.
9 ft. 13 17	4 ft. 20 40	These proportions nearly correspond with those of *fig.* 76. Vol. III. p. 211. with the exception that the height ought to be 10 ft., instead of 4 ft., at the first set off.

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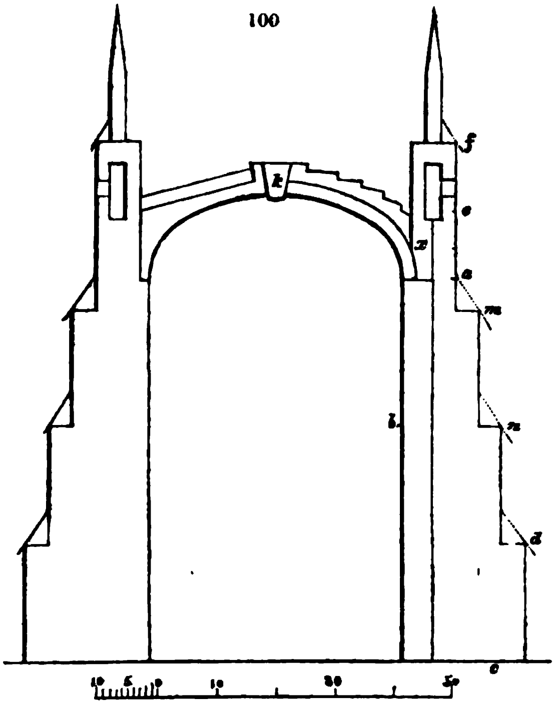

When a lateral force was applied at *a*, it required the masonry to be raised 12 ft., or 6 in. in the model, before it caused the buttress to revolve on *b n*; since, with any weight less than this, the part of the buttress *a m* revolved only on the set off at *m*. On apylying the lateral force at *x*, which is 10 ft. above *m*, the masonry was required to be raised as in *fig.* 76. Vol. III. p. 211., and, indeed, higher, before the lateral force caused the part of the buttress *x b* to revolve on *n*, or the whole buttress (*x c*) to revolve on the foundation (*c*). Upon adding the part *d c* to the buttress, thus completing the model of the chapel buttress, and applying the lateral force at *a*, it required more than twice the weight of the buttress, contained between *a* and *c*, before it would revolve on the base (*d*). The same precise result ensued with the experiment above referred to, in Vol. III. p. 211., upon adding the part *k f* to it.

These buttresses, throughout the building, are 23 ft. 6 in. apart, taken from centre to centre of each; and the masonry of the wall extends 4 ft. 3 in. on each side of every buttress to the window between, which is 15 ft. span. From this, it is evident that each buttress has to support 23 ft. 6 in. in length of the stone roof, and only 4 ft. wide of it; or, one sixth is directly supported by the buttress, which is just 4 ft.; consequently, the remaining part (19 ft. 6 in.) acts as a positive weight, the thrust continuing the same, on the 4 ft. wide arch immediately resting on the buttress; and, therefore, the lighter this 19 ft. 6 in. of arch roof is constructed, provided it be of sufficient strength, the less is the quantity of materials required. To this the architects of the chapel paid due attention, since the thickness of the masonry and arch is only from 4 in. to 6 in., where the ribs do notintervene.

Upon erecting a model arch, on the scale of half an inch to a foot, and the 19 ft. 6 in. in length being assumed at 24 ft. average thickness, it was placed on that part of the buttress comprehended between the letters *a b*, and it balanced firmly. The arch had been placed, previously, on the pier as high as *x*; but the buttress gave way on *n*. The part of the structure *a e* equals the height of 12 ft.; and this height of masonry was found necessary, as before shown, to cause the buttress, by the lateral force, to revolve on the base (*b n* or *n*). The part *e f* also equals 12 ft., and may be considered all solid masonry, if the pinnacle above be allowed to make up for the hollow parts. On erecting these (*f e* and *e a*) upon *a*, from where the arch springs, the arch then balanced with two thirds of *f a* on the crown, equalling a half pound weight; and when the two side window arches were erected, abutting against the roof arch at the springing, and on the same pier (*a b*), with the masonry above completed, the roof arch balanced firmly with 2½ lb. This weight of 2½ lb. equals more than twice the weight of the pinnacle (*a g*), and, at 17 tons to half a pound, equals 85 tons, which is strength quite ample for the security of the roof.

On the buttress, at *a*, there is the masonry above, equalling *a f*; likewise the weight arising from the two side window arches with the incumbent masonry, which, together, fully equals the necessary part of the pinnacle above *f*, to cause the buttress, omitting the part *d c*, to revolve on the base line *c*, when a sufficient lateral force is applied at *a* or *x*.

It has been shown by the late experiments, that, in consequence of adding *d c* to the buttress, a greater weight than the pinnacle is absolutely requisite, before the buttress will revolve on the base (*c*); and, since all the weights above enumerated are less than twice the weight of the buttress contained between *a* and *c*, it will therefore still revolve on the base line *d*, when an overturning lateral force is applied at *a* or *x*. The extra strength caused by the addition of *d c* to all the buttresses is useful towards preserving the stability of the fabric against the shocks of tempests. The pinnacle at *g*, in the building, is raised to within a trifle of the height of the true proportions o buttress, as given in experiment fig. 76. Essay III. p. 211., when a lateral force is to be applied to the point *x*, which is 10 ft. above the set off. Now, the point *x* is 3 ft. above where a straight line may be drawn from *k* to *y*, just within the voussoirs and masonry.

The weight of the timber roof, covered with lead, has not been taken into consideration; but the circumstance of its being tied together by strong beams, crossing from buttress to buttress, and having perpendicular beams placed under these towards each extremity, resting on corbels issuing from the wall, just above the lowest extrados of the roof arch, causes little or no outward pressure. The side walls, as has been before stated, are 5 ft. in thickness, and the buttresses are 4 ft. wide by 21 ft. through at the bottom. Now, this proportion gives the greatest strength with the least quantity of materials, as shown by figs. 69, 70, and 71. Vol. III. p. 207. The round towers at the four angles of this building perform the part of buttresses: they give variety, and add extreme beauty, to the chapel.

It appears, from the above enquiries, that the architect of this justly celebrated chapel, being perfectly aware of the law of buttresses, constructed a pier which would safely balance with an elliptic arch, and proper proportions of roof upon it. This being found, the lower parts of the buttress followed, of course, with the masonry above, and the pinnacle (*a g*), as in fig. 76. Vol. III. p. 211. The lowest part (*d c*) relieved the great height (*c n*), completed the pyramidal form, and added resistance to any lateral motion of the whole building on the foundation. The spaces left between the buttresses afforded room for convenient ante-chapels, libraries, &c.

On inspecting Mr. Britton's work, or the building itself, it will be seen that each buttress at *a* forms the centre of its respective proportions of the stone roof, from which the ribs extend after the manner of radii, and through these ribs other ribs pass concentrically. The forces of all these are reduced to two straight lines, one of which runs through the centre of the whole roof, and parallel with the line of buttresses, and the other at right angles to the first line, and extending across from pier to pier, or from buttress to buttress. The keystone, which is of great weight, is placed in the centre of every four buttresses, and is most essential, not only as a wedge, but, from its great weight, locking up, as it were, the lighter parts of the roof in perfect safety against being displaced by the fortuitous pressure of any person's foot.

Canterbury Cathedral.—*Fig.* 101. represents three arches, with their pillars, being part of the under croft of this cathedral. The particulars of the dimensions are as follows: —

The span between the pillars is 13 ft. 5 in. The height of the

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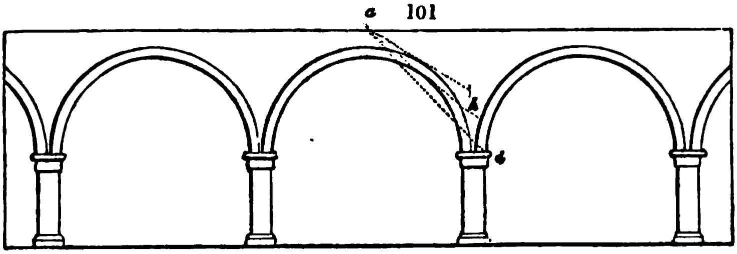

pillars is 6 ft. 1 in. The height of the shaft is 4 ft. 6 in. The diameter of the pillars is 1 ft. 3 in. The arches are semicircular.

In 13 ft. 5 in. there are 161 in., which, divided by 6, gives nearly 27 in. for the true diameter of the pillars. The diameter of these pillars is, however, 15 in., therefore 12 in. within the balancing proportion; and, in consequence, a reduction of 6 ft. from the dimensions of the span is necessary to restore the height to the balancing proportion. Now, 6 ft. from 13 ft. 5 in. leaves 7 ft. 5 in., which would be the true height to support equilateral Gothic arches: but the present are Roman arches, and, therefore, they require each pillar to be reduced one fourth part lower, as shown by the experiments relative to figs. 147. and 148., &c., Vol. III. p. 409.; and this fourth part would lower the height to 5 ft. 7 in. The pillars are, however, 6 ft. 1 in., therefore they exceed the true balancing height by 6 in.

It has been before shown, when treating of the under croft of Rochester Cathedral, that pillars supporting four arches, two of which are at right angles to the other two, will carry twice the weight that two other arches can support. The excess, then, of 6 in. in the height of each pillar, may be considered as nothing. The masonry through the arches to the surface of the pavement above is about 2 ft. in thickness. In these semicircular arches the dotted straight line *a d* falls quite without the intrados; but the dotted line *a h*, to the point *h*, falls quite within the solid masonry; and *h* is the point of the greatest lateral resistance of the semicircular arch, as shown by the third experiment in Essay I. (Vol. III. p. 57.)

North Aile of Canterbury Cathedral. — *Fig.* 102. represents three arches and piers of this part of the building. The particulars of the dimensions are as follows: —

The span between the pillars is 11 ft. 4 in. The height of the pillars is 22 ft. 8 in. The height of the shafts is 18 ft. The diameter of the pillars is 2 ft. 10 in. The thickness of the masonry, from the intrados to the top, is 3 ft.

The span, divided by 6, gives 22½ in. for the true diameter of a pillar, whose height equals 11 ft. 4 in. In the case before us, the height of the pillars is double that of the span, and the

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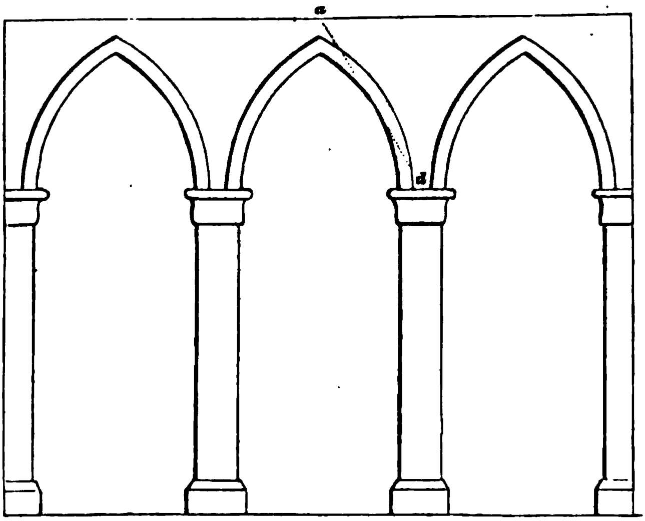

diameter exceeds the true one by 12 in.: this will allow only of the addition of 6 ft., thus making the height 17 ft. 4 in.: the height of the pillar, however, exceeds this by 5 ft. 4 in. Now, according to the law relative to pillars supporting arches, it will be seen, on turning to the experiments relative to figs. 136. and 137. Vol. III. p. 355., that, in the case of fig. 136., having a 4-in. base, and taken 9 in. high, and, in the case of fig. 137., having a 6-in. base, and 18 in. high, they both balance under very nearly the same weight on the crown of the two arches.

Here, then, is an exact correspondence with the dimensions of the pillars under consideration; for their diameter is just 34 in., which is one sixth and one twelfth (being one fourth) of the span, or one and a half diameter (of the true proportions); and the height of the pillar double of the span, or, double of the balancing height of one diameter of the true proportions. From what has been already observed, it may be correctly concluded, that these pillars and their arches possess equal stability with those pillars and arches whose height equals the span, and have their diameter just one sixth of the same.

The dotted straight line *a d* falls on the centre of the pillar at the point *d.*

Of the Nave of Canterbury Cathedral. — *Fig.* 103. represents this part of the building. The particulars of the dimensions are as follow: —

The span between the pillars is 28 ft. 2 in. The height of the pillars is about 56 ft. The diameter of the pillars is 5 ft.; but they are square, and placed diagonally against the outward force of the arched roof, and, in consequence, the diagonal line

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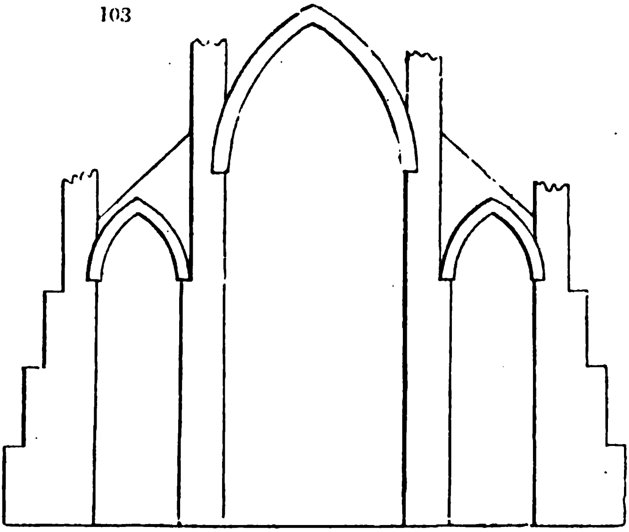

is greater, being 7 ft. These pillars support two arched roofs in one direction, and arches from pillar to pillar, in the other direction, which is at right angles to the first.

In the span of 28 ft. 2 in., there are 338 in., which, divided by 6, gives 56 in., and a little over, or 4 ft. 8 in., for the true diameter: but the diameter is 5 ft., therefore 4 in. more than the true one. Now, the height of the pillars is 56 ft., which is just twice the span; and the true diameter is, in consequence, one twelfth, instead of one sixth.

It has been stated that the pillars are placed in the centre of the meeting of four cross arches; therefore, as shown in several preceding cases, they stand firm. They, however, possess other advantages, with respect to their stability, by being square, and placed with their diagonal line against the outward thrust of the arches; in consequence of which their stability is increased equal to one fourth of their height. (See Rochester Cathedral.) Again, the diameter of these pillars being 4 in. greater than the true one, has the effect of shortening each of them 2 ft. Both these circumstances, together with the arches crossing each other at right angles, are sufficient, as time has already shown, to preserve the stability of this splendid and grove-like structure.

Of Bell Harry Tower, in Canterbury Cathedral.—*Fig.* 104. represents a part of the tower, the particulars of the dimensions of which are as follows: —

The span between the pillars is 19 ft. 9 in. The height of the pillars is 58 ft. The diameter of the pillars, which are square,

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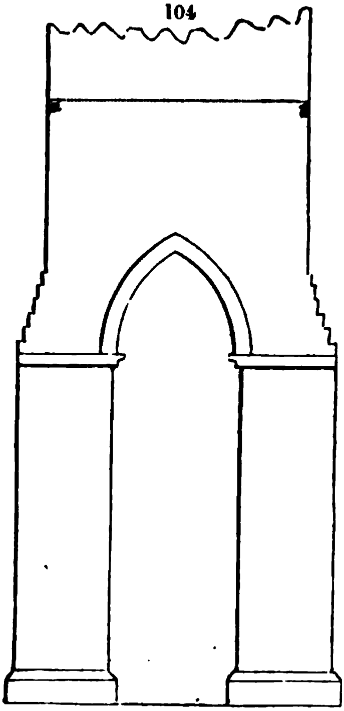

is 12 ft.; but, being placed diagonally to the force, they equal 16 ft. 6 in. The height of the masonry, or the tower, above the crown of the arch is 162 ft. The total height of the tower from the ground is 237 ft.

The span of the arch is 19 ft. 9 in., or 237 in., which, divided by 6, gives 39½ in. for the true balancing diameter of pillars equalling in height the span of the arch. In this instance under consideration, these pillars are 12 ft. square; but, their being placed diagonally to the thrust of the arch, the diameter may be said to be equal to 16 ft. 6 in.; and their height is 58 ft., which is very nearly three times the span. These dimensions being beyond the scale, or proportion, of one sixth, the stability of the tower must be estimated in another way.

Now, in the experiment shown by fig. 153. Vol. III. p. 413., the pillar employed is 6 in. square, with the span of the incumbent arch 11½ in.: but let us say 12 in. In the first place, then, as 6 ft. (diameter) is to 12 ft. (span), so is 12 ft. (diameter) to 24 ft. (span): again, as 6 ft. (diameter) is to 10 ft. (span), so is 12 ft. (diameter) to 20 ft. (span).

In the first of these proportions, the span of the arch is given at 24 ft., which is too much by 4 ft.; and in the second, the span is 20 ft., which is nearly enough; but, then, the dimensions of 10 being substituted for 11½ or 12, is too small: the truth, it will be admitted, lies between the two.

In the experiment relative to fig. 153. Vol. III. p. 413., the balancing height is shown to be 16 times 6, and if taken at 12 for the span, equals 8 times 12. The pillars of this tower are in height 58 ft., which is not quite three times the span: they are, therefore, far within the balancing proportion. Again, as they are placed diagonally, their stability is increased a quarter part, as shown by Rochester tower; consequently, the balancing height of these pillars to this span of arch may be considered as 10 times the span: but they are not one third part of this, and, therefore, their stability is undoubted. This tower, like that of Rochester, is situated in the centre of the cathedral, and is, in like manner, supported by the walls and arches forming the cross, which act at right angles to the forces of the four arches which carry the tower.

Having now given the nature of the stability of the towers of both Rochester and Canterbury Cathedrals, it may not be amiss, perhaps, to compare the two together: —

Rochester Tower.			Canterbury Tower.			Difference.		In favour of
	ft.	in.		ft.	in.	ft.	in.	
Span of the arch .	26	0	Span of the arch	19	9	6	3	Canterbury
Height of the pillars	32	0	Ditto	58	0	26	0	Rochester
Diameter of ditto	5	10	Ditto	12	0	6	2	Canterbury
Height of the tower above the arch . . .	83	0	Ditto	162	0	79	0	Rochester
The squares of the bases of the four pillars of the tower equal at 6 ft. square each, 144 ft. square as the foundation base.			The squares of the bases of the four pillars of the tower equal at 12 ft. square each, 576 ft. square as the foundation base.			432	0	Canterbury

Now, to exhibit the stability of these towers more clearly, the proportions of each are arranged as follows: —

Particulars.	Rochester.		Canterbury.	In favour of	
				Rochester.	Canterbury.
The span we will call equal, or, as . .	1	is to	1	0	0
Height of pillars to balance, is as $\frac{3}{4}$ is to $\frac{3}{8}$, or as .	1	—	2	0	1
Diameter of pillars is as .	1	—	2	0	1
Height of tower is as . .	1	—	2	1	0
Foundation base is as . .	1	—	4	0	3
				1	5

Or, correctly, the stability of Rochester tower is to that of Canterbury as 1 is to 2; and, as respects the pressure of each upon the foundations, with the double height of the tower of Canterbury, it is also as 1 is to 2. Therefore, Canterbury tower has twice the stability of that of Rochester tower, and has, likewise, twice the advantage in favour of foundation base.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Report on the last Excavations in the ancient Theatre of Catania.* Made by SEBASTIAN ITTAR, Architect of the Commune, and Honorary Member of the Royal Institute of British Architects.

(Read at an Ordinary Meeting, July 24. 1837.)

HAVING caused some excavations to be made to a sufficient depth, we at length reached the pavement of the platea, or pit, and found that it was divided into compartments of marble, granite, and rosso antico. We also discovered in what manner the cunei of the seats, and their intermediate stairs, terminated at the orchestra. Under the pavement of the pit, we perceived various water drains, in different directions. Several fragments of sculptured marbles were also turned up, and portions of ornaments; the most interesting of which are, a very fine torso of a faun, and the upper part of a dolphin. From these fragments from the drains above alluded to, which received water, and from another piece of marble, found above fifty years since, on which was sculptured another dolphin, I have discovered that there were fountains round the platea at the ends of the cunei. There was subsequently made another excavation under the lowest corridor, where we found a substructure of large masses of calcareous tufo, without mortar, similar to the construction of the seat, and of the Greek emissary, which remains. This circumstance, together with the discovery of the said pavement, made me perceive that their lines did not correspond with the scena, and with the lateral passages of the pit. I thence concluded that the theatre had been rebuilt, on a plan varying from the position of the original structure. These discoveries confirmed the imimpression which I had always entertained, that the theatre now existing is a Roman work, erected upon the ancient Greek theatre; and it is proved by the embellishments of the corridors and vomitoria, which are so contrary to the simplicity of the Greeks.

Another fine discovery has also resulted from the excavations, and that is, the use of water in the ancient theatres. That of Taormina, to which I have also paid particular attention, has afforded me still greater proofs on this head. Besides the pleasure and use to be derived from this circumstance, as proved by the fountains of the theatre of Catania, and for cleansing the entire theatre, it served to inundate the platea, or pit, to the height of about four paleas, so as to represent the sea, on which were introduced boats, and every other circumstance calculated to give effect to marine pieces. This conclusion I have come to from various aqueducts, which led the water into it, and from the emissaries which discharged it from the platea, as also from the places for preparing the entrance and departure of the boats, and other machines, adapted to such representations.

ART. II. *General Notice.*

A COLLECTION of all the different Kinds of Stone found in the United Kingdom, well suited to the purposes of building, is being made by the Commissioners of Public Works at Whitehall, where all architects employed in the erection of public works will have an opportunity of examining the specimens and selecting such materials as may be best suited, from facility of working, resistance of corrosion, and decay from exposure to weather, and other qualities requisite for the strength and durability of the said works. It is much to be lamented, that in several of the public edifices erected of late years, great defects, arising from the corrosion and crumbling of the stone with which they were built, are already visible; which, in consequence of the above advantageous opportunity, are not likely to occur in future. — *M. C.*

THE

ARCHITECTURAL MAGAZINE.

OCTOBER, 1837.

ORIGINAL COMMUNICATIONS.

Art. I. *On the Principles of Design.* By T. Sopwith, F.G.S.

No. 1. Architecture, — continued from Vol. III. p. 400.

The defects which prevail in the interior arrangement of many of the churches of the establishment have not only had the effect of estranging many hearers, but of causing very serious, and, in some cases, fatal results, to those who attend. Public attention never seems to have been sufficiently directed to this important and venerable department of architecture; nor is it unreasonable to suppose that the discomfort and want of accommodation of the churches in many towns, and of nearly all in those in the country, have tended to promote dissent, and to strengthen the aversion which of late has been manifested to contribute to the repair of these sacred edifices. This is not the place to enquire how far the establishment of the church has tended for nearly three centuries to preserve a uniform and sublime devotional service, which by many has been deemed one of the firmest pillars of social order. Certain it is that no one who has been accustomed to it from infancy can regard it without admiration. That a uniform and reverent performance of divine service may long be numbered among the institutions of the land is, probably, the sincere wish of every cordial lover of his country; and, with reference to this prospect, and to the rendering it available at all times, and to any required extent, the following remarks are suggested.

I have already briefly hinted at some of the inconveniences which arise from the prevailing practice of imitating ancient churches, instead of adapting them to modern objects and to modern habits. Religious services were formerly more a matter of splendid ceremonial, and impression on devotional sentiment, than of that calm reflection and sincere and rational piety which now happily prevail in a large, and it is to be trusted, increasing part of the community. The former impressions were in admirable unison with, and heightened rather than impaired by, those architectural arrangements which have been alluded to, as being in some degree incongruous with the objects of modern Protestant worship. By many architects, and indeed by nearly all of the profession, the models afforded by ancient cathedral and other churches are deemed to form a standard guide in selecting the form and arrangement, as well as the decoration and expression of style, of a modern church. To any attempt at what would be called a mechanical arrangement expressly adapted for the use of a modern congregation, a strong feeling of objection is entertained; and the public taste is conceived to warrant an adherence to the ancient style, with all its imperfections, rather than suffer any attempt at modern innovation. For this feeling, which, I am aware, exists to a great extent, both with professional persons and in the public mind, there is certainly some foundation; for it must be confessed that the great pictorial beauty and grandeur of expression of the cross-like churches, and the interest conferred on them by long and impressive associations, cannot easily give way to any new and untried mode of building. I say new and untried; because there has not, that I am aware of, been any church erected solely with reference to its fitness for the purposes for which it was designed, and a due regard to that expression of style which is essential in a place of public worship.

It is scarcely possible to enter a church, without at once perceiving in it many circumstances which strike the mind of an attentive observer as being grossly at variance with strict propriety, as regards the principle of fitness for the desired object. This arises, in a great measure, from the churches having been built with reference to a mode of worship which required a different arrangement to that which would best suit the service of a Protestant congregation; but, still, it is lamentable to see how much more might have been done, in adapting them to their present uses, if the principle of fitness had been kept steadily in view. The adaptation of the principle of fitness to any given building requires a knowledge of, 1st, the objects for which a building is intended; 2dly, the extent to which these objects are required; 3dly, the local and other circumstances which limit the range of abstract principles; 4thly, economy, which includes either the knowledge of the expense necessary for the perfect results that are required; or the accomplishment of the maximum fitness that can be obtained for any given amount placed at the architect's disposal; and, 5thly, the local habits and customs of the persons for whose use a public building is designed.

Now, as regards churches, they may be classed under three heads: 1st, Cathedral or Collegiate Churches; 2d, Churches for the accommodation of a large auditory, as in towns; and, 3d, Village Churches, where the number of hearers is comparatively small.

To each of these a different rule of *fitness* applies; and, first, of cathedrals. Among the chief characteristics of the greatness and splendour of the British empire, the structure and service of its magnificent cathedrals have always had a powerful hold on my feelings and admiration. On beholding those mighty monuments of former piety, those gigantic remnants of past glories, the contemplative mind is impressed with elevated and sublime ideas. Historical importance and architectural effect alike combine to arouse the noblest sentiments; and, with feelings of intense admiration and religious awe, I have entered the walls of many of our English cathedrals. I am led to speak more fully on this subject, because I do not think that the whole range of architecture, ancient and modern, presents to the mind a more perfect example of the powerful and impressive effect produced by a building founded on correct principles of design. Most of our cathedrals combine an exact aim at fitness for the objects for which they were erected; with a great degree of appropriate architectural embellishment or beauty, and a description of expression so venerable and impressive as to leave no room for doubt whether the true character of a religious edifice has been achieved. An admiration of this kind was firmly impressed on my mind on a first visit to the "Grey towers of Durham," and the recollection of it is preserved in a *Journal* written at the time, from which the following is an extract.

"The effect on entering the middle door of the screen is uncommonly grand and striking. The marble floor, the stalls surmounted with richly carved pinnacles, the elevated throne of the prelate of the diocese, the light and elegant screen of the chancel, with the magnificent wheel window and the tall and stately lights of the Chapel of the Nine Altars, possess a character of sublimity, the effect of which is greatly increased by the grandeur of Divine service as daily performed here. When the majestic pile vibrates, as it were with tremulous joy, amidst the thundering echoes of its powerful organ; or when the dulcet and mellow tones of that instrument accompany the softer music of the choir, the effect is thrilling beyond description. The melancholy and affecting cadence, and the pathos and mournful sublimity, of the chaunted responses, are, I think, superior to any musical effect I ever heard. The senses receive with delight, and the mind dwells with rapture on, sounds which appear almost beyond the reach of human skill; so exquisitely perfect is the choir of this cathedral, in this department of the service. Handel's Coronation Anthem, 'Zadok the priest,' was performed; and that majestic composition expressed on so brilliant an organ, accompanied by so perfect a choir, and heard under so magnificent a roof, amply repaid me for my visit. The evening anthem, also, was uncommonly grand; the shaking of the mountains, and the trembling of the earth; and the raging and swelling of the waves of the ocean, being indicated by the music, which was followed by a treble duet expressive of confidence in God.

"The more I see of this cathedral, the more am I delighted with the skill and taste displayed in the architectural arrangements of our forefathers. In them, we often contemplate a race of rude barbarians; their princes, unlettered and ferocious conquerors; their nobles, haughty, ignorant, and ambitious warriors; and their monks and priests, a plodding, selfish, and indolent train. But let us hear them plead. Let us leave for a time these darker shades of history, and view them through the medium of their works. To form a judgment by these, the throne, the aristocracy, and the church, seem to have expended their unwearied exertions in the promotion of art, and in the foundation of structures, many of which yet remain to attest the munificence and taste of their founders; while others have perished in the revolution of ages; indicating by their ruin the all-pervading and immutable truth, that the fashion of this world passeth away."

For the original purpose of cathedral structures, considered either as temples of the Roman Catholic church, or as connected with the monastic institutions, of which in many instances they formed an appendage, the general form and arrangement of the Gothic cathedrals were well adapted. The genius of Wren, however, if left to that free control which can only be safely entrusted to master minds, would have struck out a new path in this style of building more conformable to the objects required for Protestant usages. This was prevented partly by difficulties arising from the materials he had to deal with; and partly from a want of confidence, as well as a want of taste in those who had a controlling power over the architect. Hence, St. Paul's, magnificent as it is, is no doubt much less so than it would have been, if Wren could have exercised his unfettered judgment, in the production of a magnificent and *original* design.

A cathedral structure, on so great a scale as that of St. Paul's, derives an imposing character from the great extent of the several masses of building presented on its exterior, and from the vastness of the space enclosed within its walls. In this description of building an impressive and sublime aspect may be considered as one of the chief objects aimed at; and, so long as the proportions and decoration are not discordant with general and well recognised principles of architectural style, extent and magnificence seem principal elements in the fitness of the design. A large portion of the cathedral service consists of organ and choral music, to the effect of which the loftiness of the roof, and the extent of the buildings, are highly favourable. As regards preaching, the space appropriated to the accommodation of the auditory is usually limited; and, small as it is, the arrangement of the choir seems never to have been intended for distinct hearing. This was of little consequence in the Roman Catholic church, the devotion of which consisted rather in repeating prayers, and performing ceremonies, than in listening to sermons. Had the distinct hearing of the preacher been kept in view, a greater loftiness of the wainscoting, and the placing of the pulpit in a recess with a lofty semicircular dome above, would have confined the sound, which now, in most cases, is lost in open space, or destroyed by a flat unmeaning board, placed horizontally over the preacher's head, and to which the name of "sounding board" has been most improperly applied; as any one, who for a moment considers the manner in which sound is transmitted, may easily conceive. As regards ventilation, cathedrals are, by their form and loftiness, well adapted for obtaining purity of air; but temperature has been altogether neglected, and hence most cathedrals produce a sensation of extreme coldness in winter, while, even in summer, the coolness within their walls not unfrequently forms too great a contrast to the genial warmth of the exterior. This alone is a defect which would greatly operate against numerous and regular assemblies of people meeting in them. It is, however, unnecessary to follow in detail those minutiæ in the construction of cathedrals which render them ill adapted to their modern use. Cathedrals may be regarded rather as memorials of the past than as studies for the future; and the principal effect now produced by them is, the sudden transition they afford, from the whirl and turmoil of business, to the quietness and repose of their ailes. Deeply is it to be regretted, that any part of these solemn structures should be shut out from the free inspection of the public; and still more grievous is the system of mean extortion which too often shocks the visitor who is disposed to spend a little time in them, in contemplation or study. The original object for which these long-drawn ailes and fretted vaults were designed having, as regards the national establishment, passed into oblivion, it could not be better replaced than by rendering them fully accessible to the public, as places of quiet retirement from the world; and, at the same time, galleries of national sculpture, commemorative of the glorious actions of virtuous and enlightened men. If the public were accustomed from infancy to have free access to these venerable piles, it is probable that very happy and beneficial effects would flow from it. Many persons would gladly avail themselves of an occasional retirement to study the lessons of worth and patriotism recorded in the sculptural adornments of the walls; and such a study might tend to enlighten the mind, and to improve the heart.

The following may be considered as the principles of fitness to be now observed in the arrangements of a cathedral church, as regards the adaptation of existing buildings to the performance of the Protestant worship:—

1st. As the main object of every ecclesiastical structure is the due performance of religious services, every church should afford sufficient accommodation, not only for those who perform the service, but also for as many auditors as can be accommodated within the space usually assigned to the public in cathedrals.

2d. This space should be enclosed as much as possible to a height of from twenty to twenty-five feet on every side; and no recesses for doors and windows should be left, if they can be reasonably avoided, in order that a nearly uniform surface, diversified and enriched by bold carving, should prevent the dispersion of sound.

3d. The position and construction of the pulpit should be carefully studied, with express reference to confining the sound as much as possible in the direction of the auditory, and especially so as to prevent the sound from being lost in the vast space above.

4th. To effect this, it is probable that the erection of an arched canopy of sufficient space to surround the pulpit at the distance of 5 or 6 feet, and rising to the height of from 6 ft. to 10 ft. above the preacher's head, would produce the desired result. This canopy might be made strictly conformable to the architectural style of the building, and would form an ornamental and very appropriate, because useful, addition to the choir of most cathedrals.

5th. The position of the pulpit should not be very far in advance of the altar, or communion table, in order that the east wall, or screen, behind it, may operate in throwing the sound forward. It should also be situated towards one side of the choir, in conformity with the arrangement of stalls, which form an essential feature in this style of building; and in order that the middle line of view, which in most cathedrals is exquisitely beautiful, may be fully exposed.

6th. The temperature of the interior of cathedrals should be kept agreeably cool in summer, and moderately warm in winter, without which they can never be freely attended by any considerable number of persons.

7th. The approaches to the choir, such as the nave and transepts, with their side ailes, which were originally designed for processions, and for other services of the Roman Catholic worship, may now be considered as galleries for the erection of national monuments; and, in any new arrangements or alterations, this should be the end in view. With this object, the interior of cathedrals should be rendered easy of access; and, if gained by large open doors, not only would the true character of a national temple be preserved, but a degree of free ventilation in the interior, which would be of the greatest advantage.

8th. In conspicuous places of a cathedral, a programme of the names of preachers, and of the musical service, should be presented to view. This, in some measure, is now done in St. Paul's Cathedral; and if more attended to, and especially if notified weekly in some of the public prints, there is little doubt that the attendance of the public would be much increased. If ever the love of art shall be generally disseminated among the various classes of society in this country, the architectural splendour of cathedrals, their sculptured monuments, and the musical services performed within their walls, will always afford a high degree of gratification; and, under the influence of so improved a taste, the ailes of a cathedral would be appropriate places for sculptures and paintings illustrative of religious subjects, which, being at all times of free access, would afford the public opportunities of cultivating a knowledge of art, under circumstances and impressions highly favourable to the developement of religious and moral sentiments. Such a use would, in my estimation be the true object of an extensive nave and transepts, were such employed in designing a new cathedral; and to such a use, or *fitness*, the existing cathedrals might, in a great measure, be adapted.

9th. Considered as galleries of sculptured monuments, two objects would require especial consideration; viz., the management of the light, and the arrangement of the monuments in accordance with some general design, so as to afford large spaces for groups of marble sculpture; and, at the same time, less spaces for plain tablets, which might be erected at a moderate expense; and which, though plain in themselves, would thus harmonise with the rest. A very excellent design of this kind was proposed, some years ago, by the then vicar of Newcastle, the Rev. John Smith, but, as it was adapted to the transept of a parish church, and as the subject is one which may be noticed under that head, I shall take occasion again to advert to it, when speaking of those parochial edifices in which the principles of fitness required are more numerous, and much more varied in their application.

Newcastle, June, 1837.

Art. II. *On the Obelisk from Luxor recently elevated in Paris; with some few Remarks on Obelisks generally.* By George Godwin, Jun., A.I.B.A.

(Read at an Ordinary Meeting of the Institute of British Architects, 1836.)

A great degree of interest having been excited by the transport of the Egyptian obelisk from Luxor to the capital of France; and by its ultimate erection in that city (to witness which, it may metaphorically be said, the whole of Paris stood on tiptoe for three days, during the most inclement weather), I am led to believe that some observations, partly gathered by an eye-witness, in relation thereto, with some few loose remarks on obelisks generally, although not intended by any means to present a perfect view of the subject, may not prove unacceptable at the present moment; and I therefore lay the following before you. I should, perhaps, say, in introduction, that from the great difficulty, which ever exists, of obtaining accurate information during the excitement produced by any remarkable event, I am unable to assert the fidelity of every detail given; but may with safety affirm that nothing is stated but what I believe to be correct.

The Egyptians, who seem, in a greater degree than any other nation, to have built for posterity, have left behind them a vast number of isolated stone pillars, rectangular in their form and tapering towards the top, which have been termed obelisks. Relative to the date of the origin of these *monoliths* (for they are always of one stone), which, from the simplicity of their form, and their colossal dimensions, have ever excited wonder and admiration, and, in all cases, bear witness to the persevering industry, if not genius, of the people by whom they were fashioned, nothing is known. They are mentioned, however, by some of the earliest writers, and were intended, probably, in the first instance, as memorials of certain events, such as a civil contract or a solemn covenant, or as marks of honour to the memory of distinguished individuals; although, perhaps, afterwards erected to gratify the pride of conquerors, or to adorn a temple. Nor does the custom appear to have been confined to the Egyptians; the practice of setting up a stone for such purposes being general with most of the early nations. The first mention, perhaps, that we have of it is in the 28th chapter of *Genesis,* where it is stated that Jacob, after his dream, in which he beheld a ladder extending from earth to heaven, set up the stone which had served him for a pillow, poured oil upon the top of it, and called it the house of the Lord. On this occasion, however, it is not mentioned as an extraordinary proceeding, but as an established rite; and, in various other parts of the Holy Scriptures, the practice is alluded to.

In India, and on the borders of the Red Sea, many pillars of a single stone have been found. The Grecians for a long period, it is said, had no other monuments than unhewn pillars, which they erected on their tumuli. The early Saxons raised numerous obelisks as sepulchral monuments, which they covered with mystical signs and inscriptions, termed *runes*, as did other of the northern nations. Near the town of Boroughbridge stand three remarkable obelisks called the Devil's Arrows, which Stukely the antiquary, and some others, suppose to be of British workmanship; and we find, from Holinshed, that the ancient Scots usually had about their graves as many obelisks as they had killed enemies in the field during their lives. By no nation, however, were obelisks so generally used, or carried to such a degree of perfection in their execution, as they were by the Egyptians. They appear originally to have been placed by them in pairs, before the edifices devoted to religion, or the dwellings of their kings, to distinguish them from others; while upon their sides, in their mysterious hieroglyphics (many of which, it is supposed by a companion of the late talented Champollion, were painted as well as sculptured), were recorded the name of the reigning monarch, and events connected therewith. Those which remain (and they are numerous, for they seem to have tired Time) have, consequently, proved to the moderns most valuable chronicles by which to elucidate Egyptian history; and, as our knowledge of these hieroglyphics increases, we shall no doubt be able to draw more largely on this abundant and interesting source of information.

On the origin of the term *obelisk*, there is a great difference of opinion among those who have studied the subject, as there ever is concerning matters on which no direct proof can be advanced. From some of the ancient writings it may be gathered that these monoliths were principally devoted to the sun: and, according to Pliny, the name in the Egyptian language expresses the idea of a ray of the sun, while their form presents the resemblance of it. Others have regarded the name as proceeding from a Greek word signifying a needle or skewer (*obelos*), but it does not seem possible to arrive at a conclusion.

The Egyptian obelisks seem to have been usually formed of the rose-coloured granite from the quarries of Syene: and, if we give praise to Fontana, who, as we shall see, raised one of these surprising monuments before the Cathedral of St. Peter at Rome; or to M. Lebas who has just now done the same thing at Paris, although with simpler means; how much more must we extol the science, the judgment, and the perseverance, which enabled the Egyptians, in those early times, to detach these large masses from their native bed in the quarries, to fashion them (hard and almost invincible to the workmen as the granite was) to their present form, to cover them from head to foot with sculptures, and then to transport them over a mountainous country, and place them upright in their destined stations.

Of the means used by the Egyptians to effect all this we have no information. To separate the blocks from the rock in the first place, probably the chisel only was used, labour in Egypt, at that time, being literally of no cost; and we learn from Pliny, as quoted by Rollin, that in cutting the obelisk which Constantius afterwards removed to Rome 20,000 men were employed. They might, however, have used wedges, or have adopted the course now pursued, with a similar object in view, in the granite quarries near Seringapatam; where (as Sir John Herschell relates in his *Discourse on Natural Philosophy*) the most enormous pieces are split off by a very simple operation; it is as follows. The workman having found a portion of the rock sufficiently extensive, and situated near the edge of the part already quarried, lays bare the upper surface, and marks on it a line in the direction of the intended separation, along which a groove is cut with a chisel about 2 in. in depth. Above this groove, a narrow line of fire is then kindled, and maintained till the rock below is thoroughly heated; immediately on which a line of men and women, each provided with a pot full of cold water, suddenly sweep off the ashes, and pour the water into the heated groove, when the rock at once splits with a clear fracture. Whether the ancients made use of this method, however, we are unable to determine. To transport the blocks of stone, when quarried, to their destination, it is supposed that the Egyptians must have dug canals into the very quarry; through which the water of the Nile ran in the time of its inundation; and thus, on rafts proportioned to their weight, the obelisks were conveyed to the required spot. The Roman emperors, anxious to adorn their capital, and to display their triumph over Egypt, transported many of these obelisks to Rome; we are, in fact, told by Publius Victor of forty-two, great and small, which were conveyed there, between the reign of Augustus and that of Constantine. At this moment, there are not, perhaps, more than a dozen in Rome which have withstood the effects of the stormy times to which they were exposed. The principal two of these are, the one standing before the Church of St. John Lateran; and that before the Cathedral of St. Peter; both placed in their present situation by Dominique Fontana, under Pope Sixtus V. The latter of them was brought from Heliopolis by Caius Caligula; and originally stood near the Vatican at Rome. Sixtus, wishing to place it before the new cathedral, but almost frightened by the apparent difficulty of the undertaking, called around him the most celebrated men from all parts; and more than five hundred plans for removing it were submitted to him. The one selected was by Fontana; and, although the pope feared at first to trust to him the execution of his own scheme, he was ultimately allowed to conduct it, and succeeded in effecting his purpose in September, 1586. (See *Quatremère de Quincy's Vies des Architectes.*) The work published by Fontana descriptive of the means he employed, and the fourteen or fifteen engravings (if I remember rightly) which he has given of the operation in various stages, show how complicated was the machinery, and how powerful the apparatus employed. 40 capstans, 140 horses, and 800 men were engaged in this undertaking. The height of the obelisk is about 83 ft., and the base hardly 9 ft. wide, which dimensions are not much greater than those of the Luxor obelisk, as we shall see, although the weight of the former was certainly nearly double that of the latter.

To return, however, to our more immediate purpose, the obelisk from Luxor. Ancient Thebes; the city of the hundred gates, the mysterious, the magnificent; at the appearance of whose ruins, we are told, the French army, when they entered it under the command of Napoleon, involuntarily and unanimously clapped their hands, extended on both sides of the river Nile as far as the mountains. All who have visited the spot describe the effect produced by the magnificent assemblage of ruins there presented as powerful in the extreme; some, as even appalling. "It appeared to me," said Belzoni, "like entering a city of giants; who, after a long conflict, had been all destroyed, leaving the ruins of their various temples, as the only proofs of their former existence." If this then be now the case, when all is desolation, what an aspect must have been presented by Thebes when in its high and palmy state, when the streets resounded with the hum of busy men, and its temples were thronged about with wondering votaries; when Egypt was considered as the most renowned school for wisdom and politics; and the city of which we speak could send out at once 200 chariots and 10,000 fighting men at *each* of its gates. (*Rollin.*) We must not, however, speculate: its teeming population was dust centuries ago, its glory has long since passed away, leaving little record save that presented by its ruins; and four unimportant villages now occupy the site of this once mighty city; namely, Luxor and Carnak on the east, and Gournon and Medinet-abou on the west.

Now at Luxor, as there are also at the other villages, are the remains of a spacious temple, said to have been about 800 ft. long, which was approached through a vast propylon or gateway, before which stood two magnificent obelisks of red granite from the quarries of Syene, entirely covered with hieroglyphics; and it is the smaller one of these obelisks which now stands in the Place de la Concorde at Paris.

The French government obtained permission from the viceroy of Egypt, in 1831, to carry both of the obelisks away. It was resolved, however, to bring at first but one, and the direction of the arduous undertaking having been entrusted to M. Lebas, a naval engineer, a large vessel was constructed at Toulon called the Luxor; and in the month of March the expedition departed. After much difficulty, arising chiefly from the strength of the current, and the terrific heat of the weather, which was so great indeed as to destroy all their stores, they succeeded in ascending the Nile, and safely arrived at their place of destination. The soil having accumulated considerably around the base of the obelisk, this was first cleared away; and an inclined plane was then formed from the monolith to the vessel on the river, to do which it was necessary to cut through two vast heaps of rubbish, and to destroy part of a village. All this, however, by the labour of eight hundred men for three months, was accomplished. M. Lebas then strongly cased the mass with planks banded together, in order to protect the arris from injury, and every thing being thus prepared, the engineer proceeded to lower the obelisk. The means adopted to effect this so nearly resemble (at least in principle) those by which it was afterwards erected in Paris, that I shall refrain from any mention of them until speaking of that operation; suffice it to say, that the obelisk was lowered, and conducted down the inclined plane; and, the head of the vessel having been removed (for which, probably, a previous arrangement had been made during its construction), it passed without interruption into it, and the vessel was again made perfect. When we remember that this immense mass was thus moved without any material accident, or the least damage to itself, we must accord the highest praise to M. Lebas, the enterprising director of the undertaking; more especially when we call to mind the fact, that all these operations were carried on under a burning sun, and in a country almost desolate, and incapable of supplying him with any thing that he needed.

The obelisk was embarked, but the difficulties of the enterprise had not ceased; for, to guide a mass so cumbrous through the stormy seas of the Mediterranean, it may be readily believed, was a task of no ordinary risk; this, however, was accomplished happily, and, after touching at Gibraltar, the same vessel which brought the obelisk down the river Nile, ascended with it the river Seine, and this splendid trophy both of ancient and modern intelligence was safely deposited near the Pont de la Concorde, Dec. 23., in the year 1833. Here it remained until the last year untouched, in consequence, among other things, of the non-arrival of the vessel (the same that had brought the obelisk to Paris) which had been despatched to the coast of Brittany for granite to form for it a proper pedestal. After the return of the vessel the pedestal was erected, consisting of five blocks of gigantic dimensions, cut and polished to appear but as one stone. One of the blocks, namely that forming the die of the pedestal, is about 16 ft. long and 10 ft. square. M. Lebas then constructed an inclined plane, commencing at some little distance from the river, and terminating at the top of the pedestal, in the centre of the Place de la Concorde, of pieces of unhewn stone and mortar, on which planks, firmly bedded on sleepers, were laid, to form a railway on which the obelisk might travel. A sort of car was then made, of such a form that, when placed upon the inclined plane, its upper surface was horizontal; and the monolith having been put upon this, a steam-engine of 40-horse power, erected for the purpose, was connected with it, and put in motion, in order to drag it up the plane. From some mismanagement (not on the part of M. Lebas, who from the first was opposed to the use of the engine), this portion of the process failed; for it was seen, on first putting it in action, that the car would have been pulled from *beneath* the obelisk, notwithstanding its great weight; and in fact this did take place to a certain degree. The steam-engine was therefore abandoned, and 300 artillerymen having been placed under the control of M. Lebas, he attached the obelisk to ropes connected with five capstans, and by the sound of trumpet it was raised nearly to its intended situation, without any apparent effort on the part of the men. The railway, during this operation, was plentifully supplied with hot grease, to lessen the friction; but it is the opinion of one who witnessed the undertaking, that little advantage was gained by so doing.

I said it was raised *nearly* to its situation, for it was found impossible to place it exactly in the proper position by means of the capstans. By the last turn of the levers it had been brought to within so trifling a distance of the required spot, that any additional movement on the part of the capstans would have thrown it beyond the line; in which case the success of the operation would have been rendered extremely doubtful. Here then was a great difficulty at the moment almost of success, a shipwreck within sight of port; and for some little time, I believe, M. Lebas himself was in much perplexity. He, however, who had lowered it safely in Egypt under the greatest disadvantages, who had brought it across the sea, and placed it so nearly at its destination, was not found wanting at this critical moment. He applied the battering-ram, and one fortunate and well-directed blow drove the enormous mass exactly to the required line. It now only needed then to be raised perpendicularly; and an examination of the diagram, *fig.* 105., will, perhaps, sufficiently explain the means he made use of for this purpose.

It was about half-past eleven in the morning when the first signal was given, and the capstans put in motion, and in less

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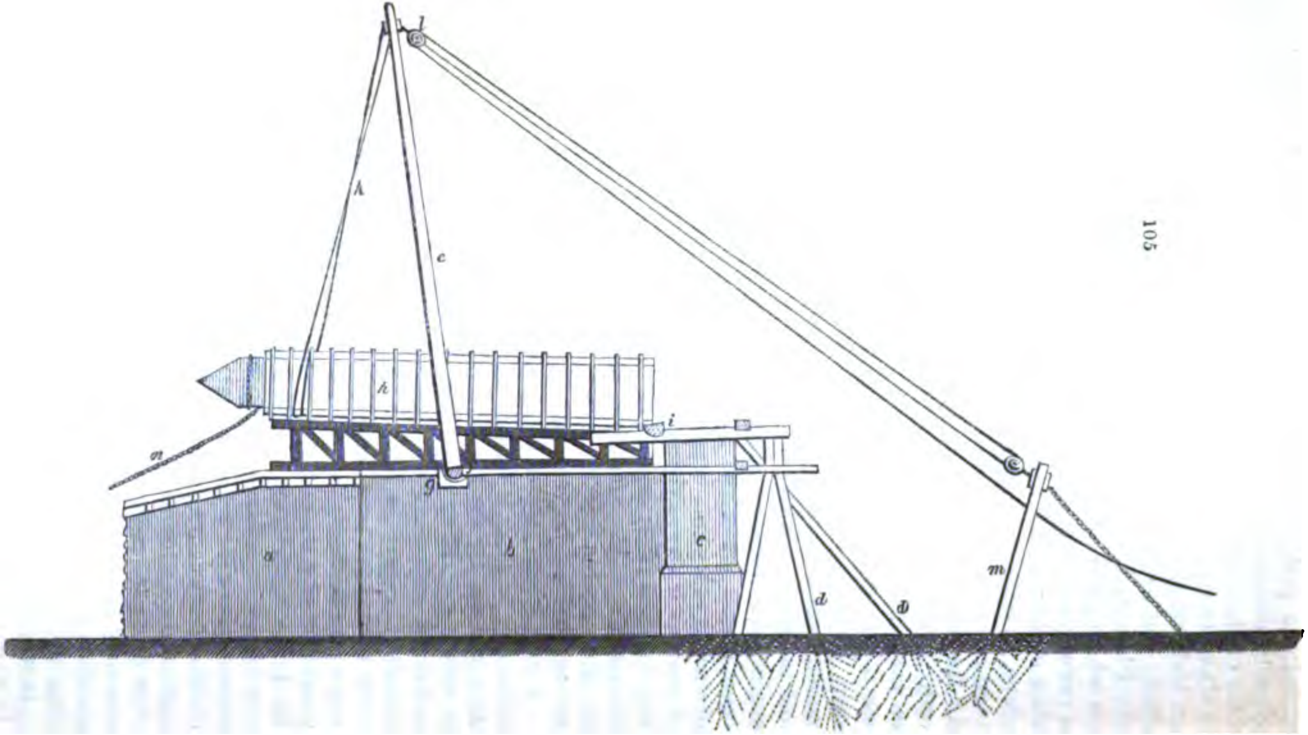

than ten minutes the end of the obelisk had described an arc of 10 ft. At this moment, a slight crash was heard, and the operations were immediately suspended. As may be easily imagined, the feelings of anxiety and excitement which pervaded the breasts of all the immense multitude assembled, became intense in the extreme; but after the expiration of an hour, during which time additional precautions were taken, the capstans were again put in motion, and without the least oscillation the immense mass was gradually raised into its present situation; where, as a French architect writes, it will probably remain until some terrific convulsion of our globe occur to displace it. The time really occupied in raising it from the horizontal position, deducting that employed in readjusting the machinery,

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Explanation of References in fig. 105.

a, Upper end of the inclined plane.

b, Level platform of rough masonry, forming a continuation of the plane; but spreading out on each side as a foundation for the apparatus.

c, The granite pedestal erected to receive the obelisk, strongly banded by large timbers, and strengthened by the shores *d d*, driven deeply into the ground. From around these shores the earth was removed to a considerable depth, and its place was supplied by ingots and wedges of iron carefully rammed in.

e, One of ten fir masts, about 70 ft. high, and 18 in. in diameter, erected five on each side of the obelisk, and firmly secured together at the top by two cross pieces and ropes. The bottom of each mast was strongly attached to one large piece (*f*), which was rounded on its under side, and worked freely in a hollow formed for it in a great beam (of which *g* shows a section) that passed from one side of the platform to the other. On the cross piece at the top of the masts were attached ten powerful pulleys.

h, The obelisk in its wooden casing, with the car on which it had been brought up the inclined plane.

i, A strong piece of timber, rounded on its under side, and working in a hollow formed for it in the timbers encircling the pedestal. This, which perhaps was one of the most elegant portions of the arrangement, received the foot of the obelisk when brought up the inclined plane, and, serving during the process of elevation as a hinge upon which it turned, ultimately guided it into the exact position on the pedestal that it was intended it should occupy.

The top of the obelisk was attached to the upper end of the ten masts by the ropes *k*; and other ropes fastened to each of the ten pulleys (*l*,) after passing round the multiplying pulleys on the timbers *m* (which were driven into the ground and secured by chains), were connected with capstans, each manned by thirty men. If, then, what I have said is as clear as I should wish it, it is hardly necessary to state that when the ten capstans, thus called into action, were put in motion, the masts were gradually drawn from their perpendicular position to a horizontal one; and while so doing gradually raised the obelisk, which turned on the hinge *i*.

n Represents a strong chain connected with a capstan at the foot of the inclined plane, in order to regulate the ascent of the obelisk, and prevent a too sudden fall when it had nearly reached a perpendicular position.

as above-mentioned, was two hours and a half. To M. Lebas, the scientific director, every honour is due for the simplicity and excellence of the means he employed, and the great judgment he displayed (apparent from the fact that in every case the results exactly agreed with his anticipations). This, I am glad to say, has been fully acknowledged in the French capital, although, of course, detractors have not been wanting, and he must have felt himself rewarded for much of his anxiety, when the countless multitude who had witnessed his triumph in the Place de la Concorde simultaneously turned towards the king, who was seated in a neighbouring balcony, and rent the air with their applause. Numberless as are the cares and anxieties consequent on the duties of an architect or engineer, the difficulties continually arising in his path, only to be removed by the most unremitting application and the most wary walking, rewarded ofttimes, too, with coldness, if not reproaches — there are moments when all is paid for with great and glorious interest, and this epoch in the life of Lebas I should consider as one of them.

What pecuniary reward M. Lebas received I do not know; but it gives me pleasure to learn, from a letter recently received by T. L. Donaldson, Esq., from M. Guenepin, a distinguished French architect, that the king, in addition to the riband of the Legion of Honour which M. Lebas had possessed for some time, has appointed him Director of the Musée de Marine, in the Palace of the Louvre. Besides which, as M. Guenepin jocosely states, he has had the honour of being caricatured as a rope-dancer performing with the obelisk under his arm. It may, perhaps, be well to say here, that Fontana, after his undertaking, was created a Knight of "the Golden Spur;" and that a pension of 2000 crowns of gold was settled on him and his heirs for ever by the pope, besides an immediate present of 5000 crowns of gold; in addition to all the timber and other materials employed in raising the obelisk, which were presented to him, and which were valued at more than 100,000 francs, or 4000*l.* sterling. (*De Quincy.*)

Beneath the obelisk was placed a box made of cedar, containing, according to the custom both in England and France, the current coins of the realm in gold and silver; as well as two medals displaying the head of the king, and this inscription: —

"In the reign of Louis Philippe I., King of the French, (M. Gasparin being Minister of the Interior,) the Obelisk from Luxor was placed upon its pedestal, the 25th of October, 1836, under the direction of M. Lebas, Naval Engineer."

The height of the obelisk is about 76 ft.; the greatest width at the base, for it is not square, is 8 ft.; and the weight is calculated at 250,000 kilogrammes, about 250 tons, or perhaps hardly so much, for the calculations differ.

Like all the other Egyptian obelisks, it is four-sided, tapering gradually, and almost imperceptibly, upwards, until within a little distance of the top, when it suddenly terminates in a small pyramid. The faces of this obelisk, it is singular to observe, are not perfectly flat, but display a slight convexity, executed in such a way as to show design; and this is the case in some other instances.*

Each face of the stone is covered by three vertical ranges of hieroglyphics, displaying a finish and purity of design somewhat remarkable. The middle range of these is cut in to a considerable depth, while the others are but slightly marked; and, by this difference in the relief, a pleasing effect is produced. Those on the upper part of the stone, too, are more deeply indented than on the lower, in order to overcome the effect of distance. These hieroglyphics, which were deciphered by Champollion, show, it is asserted, that the obelisk was commenced by Rameses II., king of Egypt; but that it was completed by Rameses III., who is supposed to be the Sesostris of Herodotus; two names having been found on it. The name of a king by whom an obelisk was erected is usually seen on it, enclosed in a sort of frame standing on a base, and called a *cartouche;* and it is from finding two different cartouches on the monolith of which we now speak, that the above conclusion was arrived at. Some, however, have contended that they represent the same person (and the difference between the cartouches is certainly slight): but, be this as it may, it is nearly certain that the obelisk was not raised until the reign of Sesostris; for his cartouch was discovered by M. Lebas on the bed or under side of the obelisk. The stone was split upwards from the base nearly one third of the height of the obelisk; and, to prevent the spread of this slit, some wooden cramps or tenons had been put in, on each side of which appears this name. The various other hieroglyphics recite his praises, and the terms by which he was distinguished, "Cherished of Ammon," &c. Sesostris, who subdued Asia, and advanced farther into India than Alexander ever did, was one of the greatest conquerors of whom we have any record. Herodotus says, he saw in Asia Minor (from one sea to the other) monuments of his victories; and, even in Thrace, *pillars* were found, on which was the following inscription: — "Sesostris, King of Kings and Lord of Lords, subdued this country by the power of his arms." (*Rollin.*) He raised a hundred famous temples as evidences of gratitude for his victories; and, after completing many works that contributed to enrich Egypt, died (it is said, by his own hands) about 1458 years before our era; so that the age of this obelisk, without dating it farther back than his reign, must be at least three thousand three hundred years.

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* I learn from a daily paper that the surface of the obelisk has been covered with a concentrated solution of caoutchouc, to preserve it from the atmosphere, which is found to have an injurious effect upon the granite of Egypt, although it does not at all injure the granite of France. The quantity used was eighty-four quarts.

A monument three thousand three hundred years old! The mind cannot at first appreciate this amazing period of time, or see the vast proportion which it bears to the age of the world; it cannot carry itself immediately so far back into the past; but needs to reconsider, and judge of it by some familiar standard. No one, however, can do this; or can contemplate the amazing changes which have occurred in the world since the original erection of this obelisk, without the strongest emotions of interest and pleasure. Countries now highest in civilisation were then not known; while those now affording habitation only to wild beasts or wilder men were flourishing and populous cities. Troy had not fallen; Homer was not born; Solomon's Temple was not built; and Rome, Rome the leviathan, arose, conquered the world, and passed away into a mere record of her former self, within the period during which this stone has braved the elements.

ART. III. *Notes on modern Architecture.* No. 2. By AMICUS.

AMONG the buildings recently erected in the city, the Atlas Insurance Office claims notice for its generally harmonious composition: there are certain faults, but these belong more to the style of architecture than to the architect; and for this reason, I would always recommend architects to consider well what is reasonable and consistent in the style of architecture they adopt, before they put into execution large works, such as will stand for ages a monument of their taste and skill in the art. Now, however beautiful the Italian architecture may be considered, we ought to reject those combinations which will not bear the strictest test of reason; the most glaring fault perhaps in this building is, a balustrade under the sill of the window, which can be of no use whatever, but in fact is a deformity, and offensive to the eye. If indeed the windows of the room had come low enough, and the balustrade had projected from the window, the eye would have been satisfied of its utility: not only would such an arrangement have been the means of producing an agreeable and additional light; but, even in London, in the most busy part, the resort of all busy men, it would have afforded an opportunity of cultivating a few flowers and evergreen shrubs that would have enlivened the situation, and perhaps might have given a taste to the occupants never before elicited. Even if it had allowed only the opportunity of stepping out of the window, it would have been sufficient to show a reason for a balcony, and a use for the balusters. I am aware that by these observations I subject myself to the imputation of being over-fastidious, these faults may be, and are by some very likely considered, trifling, or perhaps not faults at all, and totally unworthy of the notice of a critic; but, if latitude of this kind be allowed, where must it stop? Another part of this composition which in my opinion is contrary to good taste is the circumstance of the Corinthian columns being attached only to the wall, and used only as ornaments. Columns were the primitive supports of roofs or floors, and were of necessity fixed on solid and strong basements, and detached, for the purpose of aiding in the support of long beams and heavy burthens. They were afterwards altered from their rude forms, and decorated with capitals, bases, flutings, &c., and placed in situations where it was to be presumed that they were of real utility; but as civil commotions gradually occupied the attention of mankind, architecture declined. The minds that could invent the first elegantly proportioned columns (which are called perfect) were disturbed and corrupted; and, instead of the understanding being cultivated, and inventive genius fostered; known forms came to be considered as precedents, and were indiscriminately applied whether for use or for ornament. But let us in the nineteenth century separate the gold from the dross, and pursue the track of the founders of the art, who have produced in their great works unity and consistency of design. If, in the decline of architecture, columns were introduced as ornaments only, it must have arisen from the poverty of invention of the artists of the time; but, if defects are allowed to be copied from all works of antiquity, merely because they are antique, architectural propriety remains only a term, and is not understood. Perhaps it will be said, from the style in which this building is designed, that, where richness was required, no other kind could be used but that which marks the character of the style; but, although the style may be correct, which I do not deny, it does not follow that it is consistent. If a design with a certain degree of richness were required, and the designer restricted to no particular kind of style, there would be great scope given for the inventive genius of the architect: and, if architects were to lay aside the trammels of their art, and strike out a new character, although a difficult task, I do not hesitate in saying that a style of architecture might be produced perfectly consistent with our wants, our luxuries, and our customs, philosophically correct in utility and construction, and beautiful as a work of art. The creative genius of a painter is not merely confined to his materials. The architect is a painter also, but his materials are of a more stubborn nature; he should, however, shape his blocks of stone as the painter sketches his forms, he should distribute his recesses and breaks as a painter does his lights and shadows; in a word, he is a painter in chiaroscuro, but with materials of a graver nature. I should not have said thus much respecting this building, had I not been assured that the style of architecture called Italian is now very much the fashion. This style and the Elizabethan manner seem to take precedence of all others. It is strange too, considering that both are allowed to have marked the decline of the art in the age when they were originated; and the only reason I can assign for the preference now given to them is, that they are less restrained by fixed rules than the more perfect styles and manners. This reason alone calls for another style, which might be based upon the beauties and principles of pure art, unshackled by rules founded on uses different from those for which it is intended, and adapted to the wants of our climate, and the customs of our country. The faults in the Atlas Insurance Office originate entirely in the style; for the architect has produced a good effect; and, as a general composition in the modern Italian manner, it is one of the best in London.

Had the architect searched for novelty, I have no doubt that he would have succeeded in producing decorations to his windows equal in richness to those given in his design, but more consistent in subject. I feel assured that he would have soon had a host of would-be-architects endeavouring to cry him down as an innovator, because he could not cite a precedent in antiquity for his works; but he could only be spoken of in this way by the few who look upon the works of antiquity as perfect, and not to be improved; who are contented with the forms handed down by our ancestors, and who will never stretch their imaginations even to a possibility of improvement.

It is gravely asserted by some, that no new idea can be produced in architecture; but is it possible that such assertions can be serious? If the inventors of Gothic architecture had held these opinions, the orders of the Greeks would have been continued to us, with only the modifications which a difference in civilisation would necessarily produce; and, had such opinions been universally held, architecture would have been reduced to mere mechanical rules, and would have been unworthy of the title of fine art. But, fortunately for the admirers of original architecture, this is not the case; and the architecture of the middle ages ranks high as a fine art, perfectly distinct from that of the Greeks.

I continued my walk down Cheapside to Milk Street, where, enclosed by shabby brick houses, stands the new school. The style of this building is Gothic; and here I shall have much more to complain of than in the last building, because the style has not been properly adhered to. First, I take it for granted, that when the style of architecture of any proposed building is fixed, whether it is Grecian or Gothic, or a style of the architect's own invention, the *character* of that style should be scrupulously adhered to; all its beauties carefully studied, and all its defects as carefully avoided. If I determined to build in the style of architecture of the sixteenth century, I would endeavour to arrange and compose my design in such a manner that the character of the period should be distinctly carried through the whole composition, although not one feature might be copied from an existing example. In this manner, a design might be produced in the *character* of the sixteenth century, which might yet be perfectly adapted to the wants and habits of the present age; and this I believe to be the only mode of copying the ancients that can be considered legitimate. Modern English architecture, particularly as exemplified in the lately erected buildings in the streets of London, may, I think, be divided into two kinds: — First, That style of architecture where temples, porticoes, towers, windows, buttresses, &c., are avowedly taken as precedents, and reproduced in modern buildings, and which I think should be called *copied architecture:* and, secondly, The style of architecture which preserves the general characteristics of a known ancient style; and which, without servilely copying any of its minute forms or details, produces such an infusion of its laws and spirit as shall clearly mark its character, which may properly be called *imitative architecture;* and in which, if the architect considers the works of the ancients merely a base or foundation on which to build his style, he may produce works of sufficient merit to hand his name down with honour to posterity. To these may probably, at some future time, be added a third; for, were the mind of an architect of genius to be allowed unfettered sway, he might produce a work which would have no existing prototype, even in its general characteristics, but which would be consistent with the principles of utility, philosophy, and the highest walks of art; and such a work would justly merit the proud title of *original architecture.* According to this scale, how few modern buildings can be ranked under either of the last-named titles! and how both London and the country groan with the productions of mechanical minds, which may very properly be called copied architecture, and which require only the feeblest kind of mental exertion to copy and combine the forms of which they are copies! In giving these designations to buildings, however, a due regard must be paid to their respective merits; for instance, the crude forms and unskilful works of the Sandwich Islanders, however original they might be in their general features, could not be compared with works of art, which are the result of reason and high cultivation. But to return to the school in Milk Street: as a general design, it is not happy in its effect; there is a straggling of parts, and an inharmonious arrangement in the whole, which wearies the eye. The building is erected with brick and stone: now in the first place, where so much money has been expended in richly carved stone decoration, I feel a little disappointed that any material of inferior quality should have been used; less decoration would be more proper in a building of this nature, and the money thereby saved might have been expended in making the whole building of stone (or faced with stone), which would have produced, in the first place, harmony of materials; a thing of importance with regard to the propriety of the composition. In the next place, when buttresses are used, they should be consistent with the rest of the building; and placed at such distances, and in such situations, as would render it evident to the eye that they were required. The resistance of an arch or a roof in a flank wall is expressed by a buttress, which evidently marks the precaution of the architect in placing his supports in proper situations: it also marks that the architect is not only conversant with the ornamental branch of his art; but with its mathematical science, showing a sufficient and economical application of materials; neither overpowering his building with unnecessary burthens, nor endangering its stability by weak construction. When this is done, the eye of an architect becomes satisfied by the construction; for when the effect produced upon his mind by the external character of the whole building is harmonious, he scrutinises almost instinctively the scientific construction; that the foundation and plinths are sufficient to bear the superstructure; that the buttresses are enough to sustain the resistance of the groined arch, or open wood roof; that the tower joins justly with the body of the building; and, if a spire, that the proportions are such as to indicate sufficient strength to carry it satisfactorily: in short, the balance of parts should be such, that, when the building is viewed from a certain point, there shall be no obtrusion of minor importance to the principal feature; and no unskilful construction, which can leave a doubt as to the stability of the work.

In Gothic buildings the windows generally are the most important features, and no parts require more attention than these; they are, next to the doorway, the most useful in every building, and the architects of the middle ages seem to have considered that the decorations of their windows should be in proportion to their usefulness. They seem to have thought that the light of the heavens should be admitted through the most gorgeous portals, the sun's bright rays were multiplied into numerous parts by elaborate tracery, and tinged with the most brilliant colours, as they were transmitted into the buildings. Windows were then made the most splendid features of buildings, as they were to admit the most useful and splendid of nature's benefits to man. How badly the general compositions of the modern windows are designed, I need not dilate on, and I will confine myself to the building in question as an instance. In this building we have the windows exceedingly feeble in detail; the mullions in some smaller than in others; and in every case they are so small, that the effect, spirit, and boldness, which characterise the windows of the middle ages, are lost, and they appear tame and wiry; the openings are of various widths, thereby destroying the harmony of the building; the oriel, or projecting, windows of the sides are too rich for the windows under them, which are mean and tame in the extreme; these windows have no cusps in them, whereas almost all the others have, which alone is a great defect, as this kind of bad economy (if it be economy) totally disunites the parts. I conceive, to produce a harmonious composition in Gothic architecture, that all windows should be traceried, or not traceried (except such as may be called eyelets only which cannot be governed), and that the openings between the mullions and transoms should be of the same size, or nearly so, that is, the difference should not be so great as to make an obvious distinction; and that all contrasts required by windows should be produced by additional divisions, thereby increasing the sizes: that all mullions of equal-sized windows should be of the same substance and form; and that in larger-sized windows, only, the mullions should be increased, and that to as many orders as the design may require. I have mentioned before that as the window is the most important feature in Gothic architecture, so the portico stands the most conspicuous feature in Grecian architecture; and it would be as inconsistent in a Gothic window to make the openings between the mullions (or, if I may be allowed the term, to make intermullions) of various widths in the same building, as it would be to make the intercolumniations of a portico of various widths. I take these parts as the leading characteristics of their different styles of architecture, conceiving that the same principles of taste and reason apply to each. The mixture of cusped and uncusped windows in Gothic buildings is also, in my opinion, a breach of taste; on the principle that the balance of decoration is destroyed, and that the lavish display in the one case, but ill assorts with the humble simplicity in the other. Contrast and repose are to be produced more by a proper distribution of enriched features and blanks, in the general and large parts of a building, than by multiplying decoration on some of the minor parts, and stripping others to such a degree as to make them become meagre; and, as small parts depend upon their relation to each other for their general harmony, care should always be taken to prevent their being made too opposite. A variety in form may be admitted, but a difference in character would be discordant: for instance, porticoes containing two or three varieties of columns would be, to the most uninitiated, a defect; and, for the same reason, Gothic windows containing mouldings, tracery, and details, of different dates, in the same building, would be equally defective. The different divisions of Gothic architecture are as distinct in their character and form, as are the different orders of the architecture of the Greeks.

London, September 1. 1837.

ART. IV. *Candidus's Note-Book.*

Fasciculus VIII.

> "Sicut meus est mos,
> Nescio quid meditans nugarum; et totus in illis."

I. WORSE and worse! While polychromy comes in to upset all our nicely established notions of Grecian taste, a suspicion is also started that the venerable Vitruvius himself, Hosking's old woman, is neither more nor less than an impostor; at least that the writings palmed upon the world as his are the productions of some "unknown," several centuries after him. Neither is this all: for it is now discovered that the ornamental forms of furniture, and articles of luxury, hitherto received as Grecian, are, on the contrary, all of Egyptian origin, unless the Egyptians borrowed them from some earlier people. Shade of Thomas Hope! what a perplexing discovery! Why could not Rossellini let us rest at full length in the luxurious bliss of ignorance? —why must he rudely startle us from our repose by such intelligence? So, then, there is positively nothing new under the sun! All the taste which the artists employed by our Rundell and Bridges can exert in devising Grecian patterns for vases, tazzas, and similar articles, has been anticipated some thousands of years ago, by people living under dynasties whose titles are only so many algebraical signs!

II. It glads me to find that, after so much delay and so much talking on the subject, Mr. Barry's new Houses of Parliament are likely to be begun; a vote of 88,000*l.* towards the building having been carried by a majority of 80 against 20, or of four fifths. According to one paper, Sir George Strickland said that he did not think the public generally were in favour of Mr.

Barry's designs; yet he did not mention any other as having given more general satisfaction. His own opinion respecting them is certainly any thing but flattering, if it is true that he said the style proposed would be a lasting disgrace to the taste of the country! It seems, however, that we show no better taste in any other style; for nearly every one of the more important buildings erected of late years has been pronounced quite the reverse of creditable either to the profession or the nation.

III. Of newspaper exactness in matters of fact we have a curious specimen in the account lately given of the Waterloo banquet; wherein it was stated that the gallery in the Duke of Wellington's mansion is 200 ft. long by 88 ft. wide; dimensions considerably exceeding those of Westminster Hall itself, one of the most spacious apartments in Europe. What the proportions of this gallery may be as to height, we were not informed; but an apartment of the width specified must at least be between 60 ft. and 70 ft. high; whereas, to say nothing of height, it is evident there can be no such room in the house, even supposing it to occupy the whole of it, to the exclusion of any other.

IV. Among the *on dits* of the day it is reported that the Reform Club, being about to rebuild their habitation in Pall-Mall, invited six architects to a competition; conditioning that the party whose design should be approved of should be remunerated by a specific sum, instead of the usual per-centage. The gratuity was to be 1000*l.*; but it was demurred to, as being less than what the customary five per cent would amount to. On this, the committee agreed to raise it to 1500*l.*; but even this offer was not more graciously received than the former one; and there, it seems, the matter rests for the present; the architects applied to not only having refused to accede to such terms, but having protested against them "upon principle," like Gervase Skinner. If this version of the story is quite correct, the profession, at least those six individuals belonging to it, stand up for a system in itself most absurd and anomalous, and withal highly derogatory; since it is one that makes the remuneration of talent, real or supposed, utterly independent of talent, and regulates it by circumstances which have nothing whatever to do with ability; nay, so far from it, that the greater the bungling extravagance, the greater the reward. The per-centage system is one against which both common sense and common decency most loudly exclaim.

V. In his print of False Perspective, Hogarth quite overshoots his mark; for he has there brought together such extravagant blunders as the veriest tyro would hardly commit: but it would prove an essentially instructive lesson in works on perspective, were instances produced of mistakes that have actually been committed in pictures and prints; nor would it be by any means a difficult task to collect many very glaring ones, some of them no doubt occasioned by the too common practice of making up a view from sketches of detached parts taken from different stations and distances, and not afterwards corrected when put together.

VI. There is, I believe, no complete *monograph* work on the subject of doors,—not doorways, but doors themselves, exhibiting all the various modes of paneling and decorating them; or, at least, the chief combinations, for to enter into them all would require a voluminous publication. One mode, little resorted to, is that of carving or otherwise ornamenting the styles, and leaving the panels plain; which is attended with much effect, particularly if the styles be covered with plates of bronze or coloured in imitation of it. Where it is necessary to admit light, instead of doing so through a glazed compartment just above the door, the more preferable way, I conceive, would be to fill all but the lower panels with open scroll work of metal, with glass behind it; that is, where expense is less a matter of consideration than appearance. Yet, notwithstanding that doors admit of such great diversity in regard to design and decoration, and are capable of being rendered exceedingly important and characteristic features both in exterior and interior architecture, it rarely happens that we find any study bestowed upon them: on the contrary, the architect seems generally to consign them entirely to the carpenter, as belonging to his province. The doors of St. Pancras Church are almost a solitary example of that study and finish which ought to be bestowed on such parts; while as for those in the majority of our churches and public buildings, so far from exhibiting aught partaking of either, they are sadly deficient, being frequently most common-place in design, and insignificant in appearance; and that, too, where there is a good deal of pretension in other respects. Difference of colour, whether expressive of difference of material or not, is a further source of variety, according as the panels are of a lighter or darker tint than the rest of the door, or of the same or another hue.

VII. There is, I am informed, a German artist named Gegenbauer, now resident at Rome, who practises with great success a peculiar mode of fresco painting, which possesses both facilities and advantages of execution unattainable according to the usual one. His process consists, it seems, in laying a ground of stucco or whatever may be the composition he employs, upon a strained canvass, with a raised edge of proper thickness to receive it; whereby it becomes, when hardened, a slab. This being done, he paints his subject upon it; and, as the slab dries, keeps the part he is working upon in a state to receive the colours, by moistening it through the canvass at the back. By this means he is able to unite his tints, and finish up his picture, just the same as in any other mode of painting, and to get rid of one great inconvenience and drawback attending performances in fresco, at the same time that he secures to the work the durability which fresco possesses above oil. Frescos thus executed may afterwards be inserted in walls; and some, I understand, have been purchased by Englishmen and sent over to this country. It is obvious, however, that such a process is quite unavailable for subjects upon a very large scale, or intended to cover an entire wall.

VIII. "The Brandenburg Gate at Berlin," says Mr. Gwilt, "is little less (more?) than a copy of the Propylæa at Athens: *such examples do not entitle a person to the appellation of architect!*" Did the censure here conveyed fall upon Langhans alone, no one else might care for it; but the fact is, it touches a great many others besides him, quite as much, if not more; and not only those who deal in *rifacciamenti* of the prints in Stuart's *Athens*, but those who follow the Roman and Italian styles. Nay, the generality of modern triumphal arches bear a much closer resemblance to that of Constantine, than the gate at Berlin does to the Athenian Propylæa; for the former has no ascent of steps leading up to it, has no wings attached to it, no pediment, no external hall with columns and doorways; so that between the copy and its prototype, there are at any rate several "pretty considerable differences." That these differences constitute improvements, I certainly do not mean to affirm. Coming from the quarter it does, the remark itself is all the more startling, because it goes very nearly to rob Gibbs of all the merit of what generally passes for his chef-d'œuvre, namely, the portico of St. Martin's Church, which is a still more decided copy of that of the Pantheon at Rome, than the Brandenburg Gate of the structure it is said to be a repetition of. Not but that there are also striking differences between the one portico and the other; since, to say nothing of the Roman one being octostyle, it has columns within it, whereas that attached to the church has none; and, instead of having a single large doorway, it has three doors with *arched* windows above them, of most tasteless design; while, as if to render the middle door not only different from the other two, but insignificant in comparison with them, that is arched but does not rise higher; consequently, its imposts are much lower than the lintels or horizontal architraves of the two side ones. Whereas, were this centre doorway to be made square-headed, and carried up loftier than the others, the windows expunged, and other door-cases and doors substituted for those we now behold, the whole portico would be very greatly improved. In this case, also, there would not be anything, as at present, to mar the effect of the columns, which latter constitute the whole merit of this piece of architecture; all that properly belongs to Gibbs, and that can "entitle him to the appellation of its "author," being remarkable for its inconsistency and inelegance.

IX. Welby Pugin has just published another *Apology* for his *Contrasts*, to which he has appended some tolerably virulent strictures on the present state of the arts in this country; not at all complimentary to print-dealers and the getters up of annuals. According to him, and he really seems to have set himself up as an apostle of popery, Roman catholicism is not only the most efficacious, but the *sole*, nurse of art in modern times. Yet I think he would be strangely puzzled to support his arguments by facts; since he ought to be able to show that art had never declined in catholic countries; that the schools of Italy and Spain continue, if not precisely the same, very nearly the same they once were; and, also that Portugal has greatly distinguished itself by its achievements in art, being favoured no less than Italy by the joint influence of both climate and religion.

ART. V. *A Letter from* MR. GEORGE GODWIN, Jun., A.I.B.A., *on the State of Architecture in the Provinces, to the Conductor.*

DEAR SIR, When I informed you, a few weeks ago, that I intended to make a hasty tour through some of the inland English counties, you asked me to give you, on my return, some notion of the apparent state of architecture there; and, although I am at this moment so much occupied as to be unable to do so very fully, I cannot refrain altogether from complying with your request; the more especially too as all that I have seen has tended to convince me that the improvement in taste as regards architecture, happily now observable in the London public, and the consequent increased effectiveness of its professors, are not confined to the metropolis alone, but have taken place every where. In nearly all the various towns that I have visited, buildings for public purposes are now in progress, which reflect the greatest credit upon those to whom they are confided; the ordinary houses display more elegance in design than has been the case heretofore (to say nothing of improved construction), and in buildings for farm purposes, and in the labourers' cottages on the road sides, an excellence of arrangement, and a neatness in appearance, are apparent, mainly brought about (I feel bound to say) by the circulation of your excellent *Encyclopædia of Cottage Architecture;* where it is again and again reiterated, that, if you would raise the moral condition of the agricultural population, the first step should be to provide them with airy, cleanly, and well arranged dwellings, and to induce them to feel an interest in maintaining them so.

In Birmingham the building of the greatest importance, at this time in progress, is Edward VI.'s Free School, designed by Mr. Barry. This is now nearly completed, and affords a fair evidence of the skill with which that gentleman will carry out his beautiful designs for the Houses of Parliament, if permitted to act according to his own judgment. The style in which it is built is of the latest period of pure Gothic in England, namely, that which prevailed immediately before the importation of forms from Italy, which took place about the commencement of the sixteenth century, and led to the mixed style known as Elizabethan. It is a little earlier than the date of the king by whom the school was founded, but is, unquestionably, the style best adapted to modern domestic purposes. I may not now pretend to enter into an examination of the merits or demerits of the building, or I should, in the first instance, point out its well designed corridors; and, in the second, express regret at the baldness of the side elevations, as compared with those of the back and front: my general impression, however, is, that it is not merely an ornament to Birmingham, but to England. The amount of the contract was, I believe, 35,000*l.*, but the contractor is said to have lost much money by the undertaking.

With the Town-Hall all your readers are, doubtless, well acquainted. It is proposed shortly to commence casing the back-front (at present unfinished) with stone, and thus to complete this which is really a noble exterior. It is intended, too, under the direction of Mr Charles Edge, architect, to clear away many of the small buildings by which it is at present surrounded, so that it may form a termination to some of the principal streets, from which, at this time, it is invisible. On the importance of situation to such a structure it would seem almost unnecessary to speak, it is so apparent, and yet we continue day after day to erect buildings without any regard to it. The French give much more attention to this point than we do: the present intention of the authorities in Birmingham, however, in regard to the Town-Hall, shows that a proper feeling on this head is becoming more general; and, as it will, in this instance, especially improve the appearance of the whole town, it should be warmly applauded.

The Birmingham Cemetery Company recently incorporated have laid out a large plot of ground for their purposes, on the road to Soho, bounded on one side by a perpendicular cliff of the rock on which the town is built (the new red sandstone, if I remember rightly); and in the face of this they propose to excavate and construct vaults for the dead. A small tetrastyle Doric temple, of pleasing proportions, has been built from the design of Mr. Edge, before mentioned, to serve as a chapel; and a handsome enclosure of piers and gates erected. It appeared to me, when on the spot, that Egyptian architecture might have been all those gentlemen on whom I called as a stranger. It has been suggested that branch societies connected with the parent institute should be established in the principal English towns, which might be distinguished merely by the addition of the name of the town. Thus, we might have The Institute of British Architects at Liverpool, or The Institute at York, as the case might be; papers deemed of *value*, could be transmitted to all the societies in succession, and a more perfect interchange of opinions amongst architects would be effected. There are, questionless, many difficulties in the way of this scheme, but I have no doubt the council of the Institute will take it into consideration with every desire to overcome them.

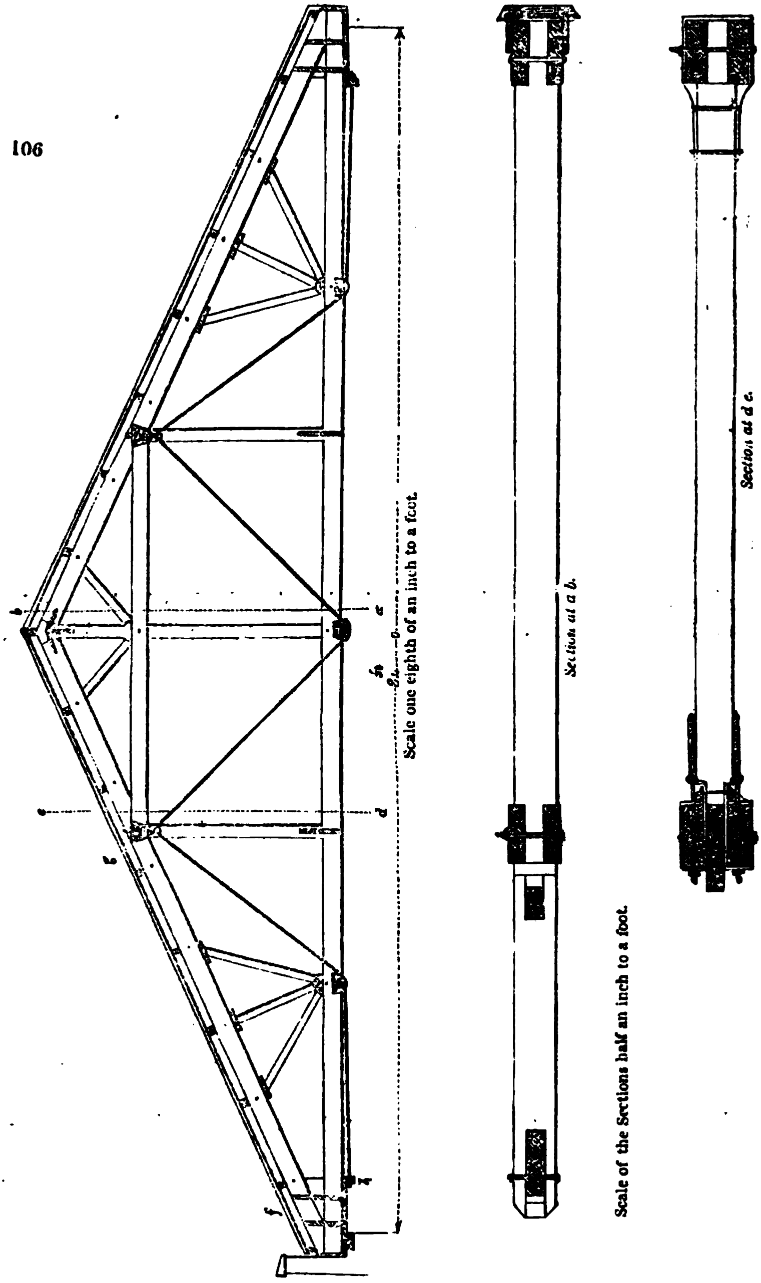
Brompton, August 31. 1837.

Art. VI. *A Design for a new Truss.* By A. Y. W., Architect, Liverpool.

In looking over your Magazine, I lately met with "An original Design for a Truss, by G. B. W.;" and from it I turned to the remarks thereon, and designs sent, by Messrs Coles and Cook. I agree with these gentlemen in thinking that G. B. W's. truss is faulty, and I do not think it displays much originality. Following the example of the above-named critics, I also send you a design, which I think would be found as effective, and perhaps as original, as that of G. B. W. The tie-beam is in two pieces, 15 in. by 4 in. each, with a space of 4 in. between. The principal rafters are in three pieces, 12 in. by 4 in. each, and bolted together. The middle one runs up to the king post, the side ones are fixed into cast-iron heads, flanging down to make a mortice for the queens; the straining pieces but against them, and are bolted together through the king post. A wrought-iron bar extends under the king post to the cast-iron heads, and another under the struts, and to a cast-iron socket, into which the tie-beam and principal rafters are inserted. The tenons of the king and queen posts (10 in. square) occupy the space between the ties. The struts are fixed into iron sockets, the width of the principals, and the rods are drawn tight by nuts and screws, on the top of the cast-iron heads. Thus the tie-beam is well supported; the truss has width enough to withstand all lateral strains; and the greatest length of the principal rafter (*fig.* 106. *f* to *g*) may even be cambered by screwing up the rod at *h*. It is in this part that roofs so often fail; and in many cases it is owing to the assistant queens not straining in the truss; consequently the tie-beam sinks, the queen post follows, and the principal rafter becomes hollow.

Liverpool, March 3. 1837.

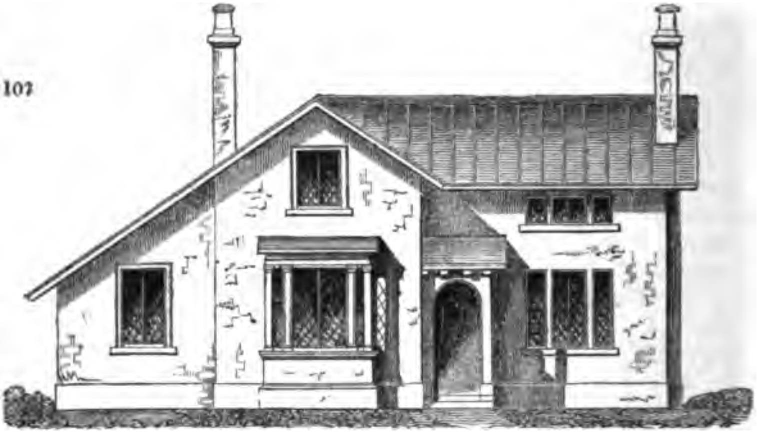
106


a
b
c
d
e
f
g
h
Scale one eighth of an inch to a foot.
Section at a b.
Section at d c.
Scale of the Sections half an inch to a foot.

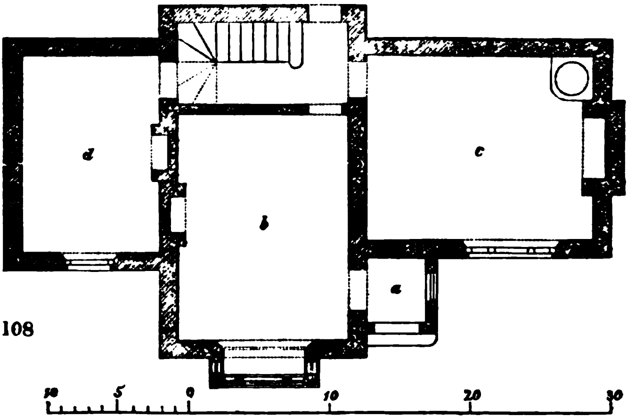
Art. VII. *A Gate Lodge, or Cottage.* By G. B. W.

Fig. 107. is the front, or principal elevation, of the lodge or cottage: the other elevations, being of little importance, are not given. *Fig.* 108. is the ground plan, in which *a* is the porch; *b*, the living-room, or parlour, 16 ft. by 12 ft.; *c*, the kitchen, 16 ft. by 13 ft.; and *d*, a bed-room, 14 ft. by 10 ft. The staircase, lighted from a window above, communicates with two rooms over the living-room and the kitchen, which may be used either as bed-rooms or for stores.

107



108



December 15. 1836.

REVIEWS.

Art. I. *History and Antiquities of the Manor House and Church at Great Chatfield, Wilts;* forming Part II. of *Examples of Gothic Architecture.* Third Series. By Thomas Larkins Walker, Architect, &c. London, 1837.

Like the first part of this series (containing the "Vicar's Close at Wells"), the present one consists of a single specimen, so fully illustrated in all its features and details, as to form a very complete study of a singularly interesting and valuable example belonging to the time of Henry VI. Without reference to this particular subject, and its claims to attention, more, we conceive, is to be learned from a single building thus treated of at length, than from two or three different ones described in the same number of plates as are here devoted to this alone; because, to understand one fine specimen of the kind thoroughly, is likely to prove more instructive than several exhibited only partially. Thus far, therefore, we consider this series to be a decided improvement on the two preceding; while it is fully equal to them in regard to excellence of both drawing and engraving. Certainly, Mr. Walker has been not a little fortunate in meeting with so perfect and admirable an example of ancient domestic architecture reserved for his pencil as that with which he has now presented us, and which he has thus rescued from whatever accident or injury may befal the building itself. We say, fortunate, because, when we examine it, we feel rather astonished that he should not have been forestalled by some one else; whereas, we do not recollect to have before seen even a view of this house, except in the *Gentleman's Magazine;* from which but a very imperfect idea can be formed even of its general character.

Although strictly domestic, and without any approach to the castellated or ecclesiastical style (for there is nothing to remind one of either church or castle), this mansion exhibits the four-centred pointed arch in some of its windows; wherein it differs from most examples of the so-called Tudor. There are, likewise, not a few particulars which distinguish it from the generality of houses of a similar class. We find here no parapet, either embattled or plain; no ornamental string-courses; no paneled surfaces; neither those rich stacks of chimneys, nor chimney-like pinnacles, so conspicuous in themselves, and so frequent in domestic buildings of the Tudor period. Yet, if herein it may seem deficient, it possesses features rarely met with elsewhere similarly disposed: four gables in the principal front, a larger and smaller one, placed contiguous to each other, above each of wings; two oriels, of different designs, and of peculiar elegance; a single shaft rising at one of the inner angles formed by th centre compartment of the elevation and the wings, whi although but very little ornamented, is well composed; together with heraldic and other figures crowning the summits of the four gables in front, and those of the hall, which extends transversely to it. The front is, moreover, remarkable for its symmetry as regards its leading divisions and outline; and it may be described as consisting of a centre retiring a little within the two double-gabled compartments before alluded to, but which do not exactly answer the idea of wings, they being much wider than the intervening space, and projecting only a few feet, yet so as to produce a bold effect of light and shade when the sun falls on this side of the building, which is north, somewhat inclined towards the west. Such effect, too, is considerably aided by the splayed buttresses turned diagonally at the angle of each of these side divisions next to the centre. Thus far, the design is uniform, as it is likewise in the arrangement of the oriels and other windows; but, as already observed, the oriels, one of which is placed beneath each of the larger gables, differ both as to form and ornament; that to the west forming three sides of an octagon, while the other is semicircular in plan, and crowned by an exceedingly rich parapet, or cornice, with open work of strawberry-leaf pattern. The pointed windows beneath the lesser gables are similar to each other; but, while under the one on the eastern side there is another window, the corresponding situation on the western side is occupied by the arch of the recessed porch. The middle division, therefore, does not contain the entrance; neither has it any windows below, but only two in the upper part, giving light on that side to the hall, which occupies the height of the ground and chamber floors. These windows differ from the other pointed ones only in being larger; and, like them, they have labels, or hood-mouldings, returned below in the form of a square placed diagonally. The absence of apertures here, in the part corresponding with the ground floor, not only contributes very much to repose and solidity, as well as to variety, but also imparts a certain picturesque expression to the whole. Yet, notwithstanding that it is one of those circumstances so characteristic of, and so effective in, this style of architecture, so far from being at all affected by modern designers, it is one which they seem most particularly anxious to steer clear of.

There are, in fact, two besetting sins, which, with here and there an exception, pervade almost all our attempts in domestic Gothic; the one is that of making uniform ranges of windows on every floor; which, even supposing their design and details to be in good taste, produces an air of monotony and insipidity in the *ensemble*, that in itself is a deviation from the character of the style proposed; the other consists in falling into the very contrary error of making hardly any two windows alike, but of all sizes and patterns, and so jumbled together, that an elevation becomes a mere hotch-potch. Those who err in either way cannot possibly do better than study attentively the example of Great Chatfield Manor House, since, in this respect, it exhibits a most happy medium. At the same time, however, that the degree of irregularity here observable is no more than suffices to break up strict uniformity without at all interfering with unity of composition as regards the general distribution, we do not hold it to be indispensable; nor that perfect symmetry ought invariably and studiously to be avoided, as inconsistent with the genius of the style itself; provided there be also contrast and variety combined with it.

The interior of the house at Great Chatfield, which is very fully described by sections and parts at large, is certainly far from being a model for a residence at the present day; yet it is not on that account less deserving of attention, inasmuch as it will be found to furnish much information, and not a few hints that may be turned to excellent account. The oak screen in the hall, the details of which are drawn to a large scale on a separate plate, is a beautiful and highly useful specimen; because it would be applicable to various decorative purposes. The mode, likewise, in which the dressing-closets are disposed on the upper floor deserves notice; while the contrivance for admitting a view from them into the hall, although not likely to be had recourse to by a modern architect, is no less ingenious than curious; there being in each of them a small aperture, partly disguised by a mask, the eyes of which are also perforated, and thus serve as peep-holes; a proof, were one needed, that the architects of those days understood how to turn to account whatever they might be called upon to provide in the way of novel conveniences and expedients.

Besides the twenty plates devoted to the house, there are seven others of the church; situated at the distance of about 50 ft. from the north front of the former; also another, showing the rich altar tomb in the chantry chapel at Corsham church, belonging to the family of the Tropenells, who erected the mansion at Great Chatfield, and respecting whom much information is given in the historical portion of the work. The intrinsic beauties of this volume will sufficiently commend it, without farther praise from us; we shall therefore, in addition to what we have already said, merely express the hope that it will aid in weaning many from their sickly prejudice in favour of Elizabethan architecture; which, in spite of the "meretricious taste" (as Mr. Walker justly terms it), and the barbarous nonsensical fancies it displays, is now, unhappily, in great vogue among those with whom fashionable repute is the sole criterion of either beauty or other merit.

MISCELLANEOUS INTELLIGENCE.

Art. I. General Notices.

National Taste in Architecture. — "The public at large has a claim over the architecture of a country: it is common property, inasmuch as it involves the national taste and character; and no man has a right to pass himself and his own barbarous inventions as a national taste, and to hand down to posterity his own ignorance and disgrace, to be a satire and a libel on the knowledge and taste of his age." (*Dr. M'Culloch's Highlands of Scotland,* vol. i. p. 359.)

Gothic Architecture. — "The Gothic style grew out of the difficulties which, in Germany, opposed the complete developement of the older and more massive manner of Lombardy, and which the increasing science of the free companies of architects alone enabled them to surmount. They deviated at once from every principle of Grecian or Italian growth, by adopting in the interlacing of their groined roofs a pointed arch, supported by rows of lofty corresponding pillars, and counterpoised by the concealed arches of the ailes, or by the perforated buttress and its pinnacles; but, surely, they displayed superior science in mechanical arrangement, when they ventured to trust a vast incumbent weight to counterpoises so admirably adjusted. Nor was their taste inferior to their skill, or less guided by principle. They gained, and they appreciated the effect of uncircumscribed *height*, the dimension of all others most impressive on the human mind and imagination, from which every language has adopted the term *sublimity*, or some cognate metaphor. To enhance that effect, they gradually, but systematically, discarded all the ornamental horizontal mouldings and entablatures essential to the Grecian colonnade, but calculated to break their loftier elevation into measured parts, and to check the eye and fancy in their upward flight. By the small and delicate foliage which, in proportioned masses, garlanded their clustered pillars, or enriched their corbeled ceilings, they created a seeming distance, which contributed by its illusion to a still greater apparent altitude." (*Quarterly Review,* Feb. 1837, p. 70.)

Improved Church Bell. — A new species of church bell, or gong, has just been invented by a blacksmith in Thuringia, which is much less expensive than the ordinary church bell, but is, nevertheless, quite as powerful. This bell consists of three bars of steel, forming a triangle.

Painted Ceilings. — I should be glad to learn whether you have succeeded in getting any account of the school of design which the Board of Trustees are instituting in Edinburgh, for the training of pattern-drawers and decorative artists of every kind. I could not help thinking of the want of such training among our artists, when I was this morning shown, as a *chef-d'œuvre* of art, a painted ceiling, on which, among other incongruities, there were birds said to be pursuing butterflies; but both species of animals having been copied from works of natural history, the birds were some lying and some flying on their sides; and the butterflies all presented their backs to the spectator, and were therefore flying with their bellies uppermost! — *T. P. London, May,* 1837.

Cuir mâché. — Mr. Joseph Esquilant, 25. St. Alban's Street, Lambeth, has recently invented a mode of manufacturing flowers, and other articles for decorating rooms, of leather, prepared in the same manner as paper is for *papier mâché.* The advantage of using this material is, that the articles are tougher and more durable. A specimen, which was shown to us by Mr. Esquilant, was thrown from one end of the room to the other, and pulled at both ends with considerable force, without suffering the slightest injury. We trust some eminent architect will examine this invention, and patronise its author as he deserves. — *Cond.*

Art. II. *Foreign Notices.*

BELGIUM.

Antwerp. — A Royal Society for the Encouragement of the Fine Arts has been established in this city, consisting of a numerous body of subscribers. The directing council is composed almost entirely of artists, with the burgomaster as president. They have an exhibition of the works of living artists every year, during the month of August, which is thrown open gratuitously to the public; the only charge being an optional one of about sevenpence for the catalogue. The exhibition which has just closed was highly creditable to the artists of the country, and contained above five hundred objects, many of them being worthy to be placed in the rooms of any metropolitan annual exhibition, much more in that of a mere provincial town. This Society also offers premiums, the subject for which, in sculpture, was, this year, " Epaminondas, mortally wounded at the battle of Mantinea, drawing the shaft from the wound, the moment he ascertains the victory of the Thebans." In architecture, there were two subjects; the one for a bazar, or building calculated for holding a fair in, in a principal town in Belgium; the other was for a Gothic Roman Catholic chapel for the accommodation of sixteen persons, to be placed in the park of a prince. The designs generally for the former of these subjects were conceived in a very loose and straggling manner, and in the French taste, with very little reference to practicability. There were twelve candidates; and a medal, with 500 francs in addition, was voted to M. Franc Jacques Stoop. For the Gothic chapel, there were seven designs; and a medal, with 500 francs also, was awarded to M. François André Durlet. This design had considerable merit; for, although the style chosen was excessively florid, the artist evinced considerable knowledge of Gothic architecture, a taste for which is now very general among the architects of this part of the Continent. The drawings for these subjects formed part of the exhibition, as well as several other architectural drawings, executed with considerable ability. M. Serrure, one of the professors of the Academy, exhibited eight drawings, executed by himself and his pupil, M. P. Erkes, consisting of elevations, sections, and plans of the famous tower of the cathedral at Antwerp, to a scale of one fortieth of the original size; so that three of the sheets, 10 ft. 9 in. high, represent the whole height of the tower, with all the details elaborately and clearly drawn, and to such a size as to distinguish each minute portion of the carving and tracery. These are about being published with some letterpress; and the engravings, which were also exhibited, reflect the utmost credit upon the talents of M. Corr and his pupils, Messrs. Collette and Linnig.

Belgium, so rich in monuments, offers but two publications that deserve to be mentioned; viz., *Choix des Monumens, Edifices, et Maisons les plus remarquables du Royaume des Pays-Bas*, par M. Goetghebuer; and, *Collection de Plans, Coupes, Elévations, Voûtes, Plafonds, etc. etc., des principaux Monumens d'Architecture et Sculpture de la Ville de Bruges*, par M. Rudd. But the former of these works is far from being complete; and it would be in vain to look in it for those beautiful churches, the cathedral at Antwerp, that of St. Waudru at Mons, or of St. James at Liège. M. Rudd's publication does not contain anything beyond what refers to the town of Bruges.

Notre Dame, the ancient cathedral of Antwerp, ranks among the first of the Gothic edifices not only of Belgium, but of all Europe. The spire, by the height and boldness of its construction, as well as by the elegance of its ornaments, is deservedly an object of admiration to every amateur of the fine arts, as well as a monument not to be rivalled by modern architecture. Notwithstanding the inimitable beauty of this masterpiece, no one has hitherto made it the subject of an especial and minute description, answerable to the grandeur of this splendid pile. A great number of engravings and lithographs have been published; but they all have been copied at a distance, or seen by the means of optical instruments, and upon so reduced a scale, that they represent but an indistinct mass, which precludes all possibility of judging and appreciating the delicacy, richness, and variety of the minuter ornamental parts of this admirable structure.

M. Serrure has undertaken this task; and, at the expense of several years of incessant labour, and sacrifices of every description, has just finished this work on the steeple of the cathedral of Antwerp.

Availing himself of the scaffoldings, which (in consequence of the order given by the magistrates of the city, in 1826, for the thorough repair of this beautiful monument) had been erected, and by causing others to be erected at his own expense, he has been enabled to measure and examine closely from its summit (to which no one before him had been able to ascend) every small portion of fine workmanship, which, viewed at a distance, appears but a rough and unwrought piece of masonry.

This work, which now is offered to the public, is, then, the fruit of several years of labour; and, being entirely classical, is the only one of this description that ever was published in Belgium. Interesting to all amateurs of the fine arts in general, it will at the same time furnish to those who apply themselves to the study of architecture, the most varied, as well as the most graceful, studies, on one of the most beautiful types of the Gothic style.

The work, which is to consist of eight engravings, will be published in three numbers, the two first of which will each contain three engravings; and to the third and last, which is to consist of two only, will be added a text explanatory of the engravings, and an historical account of the monument.

The price of each publication is 22 francs, to be paid at the time of delivery. The price of the work, when complete, will be raised to 76 francs.

There were also in the exhibition at Antwerp several specimen engravings of a work on the wooden, and other Gothic, houses of Belgium, from drawings by Messrs. Serrure and De Kuyfer, which it is also proposed soon to publish. This is a production which we should hail with the greatest pleasure; for, instead of the rarity which there is in this country, of complete authentic specimens of domestic architecture, an abundance meets the eye of the architect in the Belgian cities. On the quay at Malines (Mechlin) are three houses almost adjoining each other. One is a wooden house, with its framing distinctly marked, its enriched panels and carved gabels, and other embellishments of a similar nature: near it is a stone house of four stories high, each overhanging the other about 9 in., which is decorated in the most florid style of pure Gothic from the pavement to the uppermost story; and in which there is not a space the size of one's hand which is not elaborately, beautifully, and appropriately wrought. The next house but two presents a *façade* of the Italian revival style, with columns and entablatures, not in the vulgar distortion-like proportions of the times of Elizabeth and James, but worthy of a Baldassare Peruzzi. It is now a common beer shop; but the good-natured landlady, if she perceives a stranger admiring the *façade*, invites him in, and, leading him up a circular *Gothic* staircase, introduces him into her bedroom, the front chamber on the first floor. This is a grand saloon, about 30 ft. by 25 ft., and from 15 ft. to 20 ft. high. The chimney-piece is designed in the most exquisite manner, in the Louis XIV. style; not the barbarous, tasteless, formless, contortions now forced upon us, but full of novelty and variety directed by grace. The marble sides run up to the ceiling with suitable embellishments; and in the centre is an elegant gold frame of the same period, filled with a fine glass. The rest of the room, the doors, the dado, the walls, the ceiling, are all in the same style, and form a striking contrast with its present destination. Such was the residence of one of the merchant princes of the olden time at Malines, better known to us as Mechlin, the emporium of beautiful lace. Of such illustrations, we understand, will the work on the domestic architecture of Belgium consist; and we trust that it will meet with the success to which its novelty, style of execution, and importance entitle it. — *M. J. B. A.* *September*, 1837.

SPAIN.

Architecture and Engineering in Spain. — "The means of investing capital profitably in Spain are beyond all calculation; and the desire of Spaniards to see foreign capitalists arrive increases every day. The national property now on sale is valued, at the least, at twenty millions sterling: it is of every kind and description, most favourable to well-directed industry: 3000 leagues of roads are to be made, the contractors for which will have a monopoly of the tolls; harbours are to be cleared and bridges built; all of which would return a rate of profit to the speculator such as we have long ceased to dream of in England. An eminent French engineer has just contracted for the erection of twelve bridges in Spain, upon condition of having, for a certain number of years, the tolls now taken at the respective ferries: he will be looked upon as a benefactor by the country, and will realise a fortune by the undertaking." (*The Policy of England towards Spain*, as quoted in the *Morning Chronicle*, August 25. 1837.)

GREECE.

Present State of Athens. —The *Courier Grec* contains the following article:— There are very few foreigners who have a knowledge of the state of Athens at the present moment. It is commonly judged of from descriptions written before it became the seat of actual government. At that period, Athens presented only an immense mass of ruins, among which there could scarcely be reckoned twenty elegant houses. Two years have elapsed since then, and these ruins have for the most part disappeared; they have been replaced by several paved streets, adorned with fine houses and public buildings. There now exists at Athens a civil and a military hospital. The mint is calculated to attract attention from its fine proportions; adjoining it are several well-built barracks, a printing and a lithographic office, and thirteen small churches. Four large churches and a university are about to be erected. The new palace of the king will bear comparison with the finest Grecian buildings of antiquity. Already there are in Athens twenty public wells, besides which, all the public establishments, as well as many private houses, possess their own wells. The houses pay a small tax for the water. All these wells are supplied from two sources; one of which rises on Pentelicus, and the other at the foot of Hymettus. When the first census was made in 1833, the population was 7000 souls: at present it exceeds 18,000, including the garrison and foreigners. It is rare to meet a beggar in the streets of Athens; and, in fact, their number is small compared with that of the population. For the instruction of youth, the town of Athens possesses great advantages. It is the seat of a Greek university, and of a college, where the government has founded thirty pensions for the benefit of poor students. There is a Greek school, a parish school, and other primary schools for the instruction of children in reading and writing; and we ought not to pass over in silence the girls' school, directed by Madame Volmeranhe, in which fourteen young girls are brought up at the expense of government. (*L'E'cho du Monde Savant*, August 5. 1837.)

Art. III. *Domestic Notices.*

ENGLAND.

Paving Streets with Wood. — At a meeting of the Marylebone Vestry, held Aug. 26. 1837, "Mr. Stead was introduced to the Vestry to state his plan for paving Oxford Street with wood. He said that the plan had been approved of by Sir George Rennie, Mr. G. Rennie, Mr. Gibbs, Mr. Braithwaite, and other engineers, and that they had expressed their surprise that it had not been adopted in London. It had been found to answer exceedingly well in St. Petersburg and New York, and possessed great advantages over the usual mode of paving, inasmuch as the cost would be less, the durability greater, and it would be unaccompanied by the noise which the present system is of necessity subject to. The plan had been seen in operation in the Netherlands by Mr. Rennie, who highly approved of it. Mr. Stead was requested to furnish the Vestry with a written statement of his plan, which he consented to do." (*Morn Chron.*, Aug. 28.) It appears that this mode of paving has been tried for about a year and a half past in the Broadway, New York, and found to answer very well. The wood employed was that of the Robínia Pseùd-Acàcia, cut into hexagonal pieces, about 1 ft. long and 10 in. across. Another experiment is now being made, with square pieces of pine and other woods, with boards placed under them, where the ground is not firm. (*Newsp.*)

The National Gallery and Trafalgar Square. — It is, I believe, generally allowed that the National Gallery is an architectural failure, and that one of its greatest defects is want of height. Now, anything at all of a plantation, or even a railing, must tend to make that defect more apparent; and I do earnestly hope that the square will be left as free from every thing that can interrupt the sight as possible. I would suggest that the entire area should be covered with flag stones, and that the centre should be ornamented with a fountain, something in the style of the fountain in the gardens of the Palais Royal. I would further suggest, that there should not be any enclosure whatever; and it would then remain a place surpassed by none in Europe. (*C.* in *Morn. Chron.*, Sept. 6. 1837.)

Wellerstedt's Patent Marine Metal. — The following paper has been sent to us in a printed form; and, as we consider it deserving the attention of architects and builders, we have given it a place in our pages: — "Having been induced, by the proofs submitted to us of the valuable properties of this metal, to become the purchasers of the patent, and having now completed our arrangements for its manufacture on an extensive scale, we beg to invite attention to the advantages it offers. About five years since, some sheets were applied to the roofs of several buildings (amongst others, to the police office in Bow Street, and the Swedish church in Prince's Square); and these, on recent examination, have been found as free from corrosion or decomposition as when first put on; the surface presenting a perfectly smooth and even appearance, unaffected by the changes of temperature to which the metal has been exposed; while lead, applied at the same time on the same buildings, was much cracked and puckered in all directions. Specimens corroborative of this statement may be seen at the factory, proving decisively the peculiar adaptation of this metal for the purpose of roofing: for gutters, waterspouts, &c., it will also be found highly advantageous; its malleable qualities admitting of its being easily wrought into any form which the angles of a roof may require; and if, the edges are carefully lapped together, the covering will be perfectly water-tight without solder; which, however, may be applied as an additional security if desirable. These advantages we are enabled to offer with a metal that weighs 1½ lb. and 2 lb. to the superficial foot; whilst lead is never used of a less weight than 4 lb., and slate and tiling are considerably heavier. This superiority in lightness will at once be perceived to constitute a very important inducement for its application; as it obviously renders a much less substantial, and therefore less expensive, framing necessary for its support; and the same consideration will demonstrate the economy of its application, as a substitute for lead, for listings and a variety of other purposes in ship-building, and for lining cisterns and coffins, its hardness causing the retention of the form imparted to it, however thin the substance. The sheets are usually manufactured 8 ft. long, by 2 ft. 6 in. broad, weighing from 1½ lb. to 2 lb. per foot superficial, but may be varied in size. The present price is *5d.* per pound, with a liberal allowance to plumbers and other tradesmen by whom it may be purchased for resale;

and with whose interests we have no desire to interfere. — *Y. D. and Co. Limehouse, February* 1. 1837."

DEVONSHIRE. — *Exeter Lower Market.* Mr. Fowler's original estimate for this admirably arranged building was 13,414*l.*; but, since the building was commenced, several additions were made to it not contemplated in the original plan, by increasing the vaulted cellars to three times the extent originally proposed, and by various other alterations; and yet, notwithstanding all these, the expense is still nearly 100*l.* within the original estimate.

ISLE OF WIGHT. — *Building Churches.* Owing to the extent of the population in the Isle of Wight, a meeting was held at the Town Hall, Newport, where a church has not long since been reared, for forming a body in aid of building more churches there. The large saloon which the party assembled in contained some of the rarest specimens of Grecian and Roman sculpture, which the late Sir R. Worsley possessed. — *F. Lush. April,* 1837.

KENT. — *Tunbridge.* The line and works of the South-eastern (Dover) Railway is now being set out, under the superintendence of Mr. Peter W. Barlow, the resident engineer of this division. — *W. Tunbridge, March* 16. 1837.

SURREY. — *Dorking.* Holmwood Chapel, near Dorking, is in progress, under the direction of J. B. Watson, Esq., architect, of Manchester Street, Manchester Square. The style is early Norman, and it will be built entirely of the fine sandstone from Coldharbour Village, Leith Hill, at the expense of the surrounding gentry. Mrs. Arnold has subscribed 1000*l.* towards the chapel and endowment.

Kingston. — The foundation stone of Hook Chapel, near Kingston, has been laid: it was much wanted; and the late Mrs. Savage left by will a sufficient sum to endow it, assisted by contributions from her various friends. This chapel is also from the design of Mr. Watson: it is of the style of architecture prevalent during the reign of Henry III., and will be finished early in the spring.

ART. IV. *Employment of Painting on the Funeral Monuments of the Greeks.* Extracted from the *Nouvelles Annales des Voyages* for May and June, 1837.

(Read at the Ordinary Meeting of the Institute of British Architects, held July 24. 1837.)

THE recent discoveries on the polychrome decorations of ancient Greek architecture have excited the zeal and attention of *savans* and artists. Traces of colour have been found on the interior, as well as the exterior, of the great monuments constructed of marble, which are still preserved in Greece and in Sicily; and the abilities of the learned, as well as of the artists, have been actively applied to the solution of the question, how far the taste of the Greeks for decorating their monuments with various colours really extended; and what were their notions of the beautiful and the simple, in the application of colours to the marbles of which their temples were built?

As one discovery leads to another, it has happened that very recent proofs have been obtained of this use of colour by the ancients on a description of monuments where, certainly, we should not have suspected it. In examining the ancient cippi discovered in the excavations at the Piræus, near to Athens, traces of figures painted on the polished surface of the marble have been detected. The German antiquary, Dr. Ross, has communicated his observations upon this subject in the following letter, dated Athens, the 5th of October, 1836, which has been published in the *Kunstblatt*: —

"During the progress of the excavations made last spring, under my direction, amongst the tombs of the Piræus, we found several sepulchral stones, with the remains of architectural ornaments executed in painting; a circumstance which served to confirm my former observations. I was still, however, at first induced to consider them as exceptions; but a very recent discovery, which had been made during the works carrying on for filling up the marsh of the Piræus, has convinced me of the importance of these examples towards our knowledge of the use the ancients made of lithochromy. On this occasion we found nine or ten cippi, bearing traces of painting in different states of preservation. There are but few of the temples of Greece now left standing; and, although we recognise in them designs of ancient ornaments painted on various parts of the entablature, the friezes, slabs, and edges, we are still in the dark as to the choice of the colour made use of. But the discovery of painted ornaments on funeral monuments cannot fail to lay open a vast field to our researches on the use of colours in architecture. To speak only of Attica, the city of the Piræus, and many other towns of this district, fell into decay at an early period; so that many places of interment were abandoned, even whilst the fine arts were still flourishing. In these deserted spots, the funeral monuments gradually fell to the ground, and were buried beneath the soil, the dry quality of which was favourable to their preservation. In this manner they lie in thousands on the vast plains between the Piræus and the Bay of Salamis, and between the Ilissus and the Promontory of Zoster, where the tombs are close to one another. If we were minutely to examine a large proportion of these stones, we could not fail to arrive at some important facts on the choice and combination of the colours applied to such monuments. What would be of still more importance, would be to observe the figures and groups so painted on the stones. Who knows whether we might not thus discover some of the works of Polygnotus, of Myron, and other celebrated Greek artists? If we were to judge from the colouring on the two cippi found at the Piræus, this style of painting was practised, not by indifferent hands, but by the masters of the art. Possibly, we might thus bring to light some great work of the art of painting applied to stone." — *M. J. B. A.*

ART. V. *Retrospective Criticism.*

ERRATA. — In p. 410. l. 22., for "been considered," read "continued." In p. 415. l. 11, 12., for "discovered," read "disseminated."

In my article on Cemeteries, p. 431. line 22. from the bottom, I am made to say, "Sometimes inconvenience is sustained by *walking* down the hill." It should be *working;* that is, if the interments commence at the top of the hill, and proceed downwards, the decomposition of the animal matter, following, of course, the slope of the ground, is found exceedingly disagreeable. — *J. A. Picton. Liverpool, Sept.* 17. 1837.

Whether G. B. W.'s Truss, or Mr. Coles's Truss, is the better. (See p. 270.) *G. B. W. in reply to Mr. Coles.* — Since I am as ready to confess an error as Mr. Coles can wish, I will commence by admitting that I certainly did *not* understand his sketch-plan; and I suspect that many others of your readers did not, until they saw his explanatory letterpress. I also admit that I was wrong in stating that he had borrowed my method of scarfing; but, really, Messrs. Coles and Cook cooperate so extremely well, and are so associated together in my mind, that I trust I may be forgiven for the slight mistake of attributing to one what, in reality, was the act of the other; for your readers, on referring to Mr. Cook's design (Vol. III. p. 143.), will find that he, at least, has condescended to borrow from me. Having now, I hope, proved to Mr. Coles, that, although he is contending with an adversary who declines assigning to himself "a local habitation and a name," it is one who has no wish to "shield himself behind three initials," I will proceed to "the point at issue." Now, although this said "point at issue" may be "whether G.

B. W.'s truss, or Coles's truss, is the better," I do not consider that *he* is the person to decide it; and Mr. Coles labours under a great mistake, in supposing that I will allow, as a conclusive decision, his mere dictum that my design is bad. Mr. Coles should recollect that the case stands thus: — I submitted a design to the opinion of "the public" through the medium of the *Architectural Magazine*. He found out that it was very faulty, and forthwith sent you his design, as being superior to mine, and Mr. Cook did the same. I therefore maintain, that we are competitors; and, as such, it is natural that each should consider his own to be the best; but it does not follow that, upon the opinion of one, the others are to rest satisfied, without appealing to an impartial and competent tribunal. Had Mr. Coles confined himself to merely pointing out and commenting upon what he considered defects in my design, instead of bringing forward in opposition to it his own, and attempting to prove its merits by a disparagement of mine, I think he would have obtained for his opinions more consideration and attention from your unbiassed readers.

I most distinctly repel and deny the charge he makes against me of wishing to "*shirk* the question:" nothing is farther from my intention. Mr. Coles's last communication contains another specimen of that garbling and perversion of sentences which I before complained of; in proof of which I must refer a little back in the correspondence. How did the proposition for omitting the lower king-post originate? Did I suggest it in my first communication? No: it was called forth by Mr. Coles's critique upon the design (Vol. III. p. 95.), in commenting upon which (Vol. III. p. 142.), I said, "His objection to my design is, that the king-post truss derives its whole support from the side, or queen-post, trusses. Now, I see no reason why the queens should not be the principal supports of the truss; indeed, it is what I intended in making the design; and I introduced the lower king-post truss for additional strength; but, were the span less, it might be dispensed with entirely." It must be clear to any one reading this sentence, that my object was to show that I considered the queen-posts to be the chief supports of the truss, and that I did not attach the great importance to the lower king-post truss which Mr. Coles did. But mark how ingeniously, though I certainly cannot say ingenuously, he distorts my meaning: — "It is a tacit admission," says Mr. Coles in his last communication, "that something is wrong, when we find that he could fain reduce the span of the roof to enable him to remove the objectionable part of it!" How he has arrived at this conclusion from the sentence of mine just quoted, is beyond my comprehension; but I now tell him, 1st, I have made no tacit admission of something being wrong; 2dly, I have no wish to reduce the span; and, 3dly, I do not wish to remove the king-post: indeed, so far from considering it *objectionable*, I think it of great use, as forming a component part of the combination of trusses (which Mr. Coles himself approves); but not, as he would have it, the chief and indispensable feature of it. The latter part of my sentence, which Mr. Coles construes into a "tacit admission," &c., was merely written to show that the same principle of construction, simplified by the omission of the king-post, would be applicable to roofs of a smaller span; but, decidedly, it expresses no wish to reduce the span of the original design. Surely, as Mr. Coles has so strangely misunderstood me, he will be as ready to acknowledge his error as I have mine. I will now say a word about the principle of the truss which Mr. Coles has expressed such contempt of. A short time ago, in looking over a book, with which, I doubt not, he is well acquainted (Tredgold's *Principles of Carpentry*), my eye was attracted to a design for a roof by its similarity to my own; and, upon examining it, I found that the principle was exactly that of mine. The span is 80 ft. (4 ft. only less than mine); it is supported by a truss formed by the abuttal of the principal rafters against two queen-posts, and a straining-beam. There is the same "want of continuation in the principal rafters," which he and Mr. Cook so much deplore; and, lastly, there is *no lower king-post*. I here have on my side a high and unquestionable authority, in support of the principle so much contemned by my opponents; for

Mr. Tredgold, in a paragraph subsequent to his description of it (sect. 169. p. 89.), recommends it as superior to another given.

With regard to the doubt as to the originality of the method of scarfing shown in my drawing, I can only say " 'T is strange, 't is passing strange," that I should have selected the identical mode practised by the Winchester carpenters "for fifty years," as well as that chosen by Mr. Cook upon the very same occasion; especially, when I assure him that, among the many different scarfings in use, and engraved in books on carpentry, I never saw this!

As Mr. Coles has so freely and unceremoniously attacked my design, in his philanthropic zeal to do good to me and "the public," I should be sorry if, through any mistaken feeling of delicacy, I were to omit performing the same kind office for him. My own defence having occupied so large a space, I am compelled to postpone a few remarks I have to make upon Mr. Coles's truss; but, in an early number I shall probably follow his example in addressing a benevolent caution to "*him and the public*." — *G. B. W. London, Sept.* 4. 1837.

A Word in behalf of modern Houses. (p. 295.)— In reply to a part of an article by W. H. L., headed as above, in the June Number of your useful Magazine, p. 295, where he observes, "Were we to believe many persons," I have only to ask, Is he, then, so little conversant with mechanism, or political economy, as not to know that the movement is caused by the action of the greater of two bodies? and if the public, the "many," say so, it is a fact, and he ought incontrovertibly to believe that buildings have greatly deteriorated within the last century. To support his argument in the succeeding paragraph, he satirically observes, "This may be done either by invidiously comparing or *contrasting* the best works of a former period with mediocre ones of the present." Now, to prove that the *contrasts* have been well received (which I need not tell you evinces their worth), we need advance no further than the bitterly envious, but cleverly brought-to-bear, Italicism above. A grand production, as well known to the scientific, as the *Pickwick* is to the laughter-loving, Briton, is attacked in flank; and it is affirmed, in *dubious* phrase, that the *contrasts* are "invidiously" chosen. As they are taken on an equality, if one be mediocre, so is the other: for instance, Angel Inn, Grantham; Angel Inn, Oxford, and so forth.

Stuccoed exteriors, with architrave mouldings and cornice of the same, W. H. L. appears partial to, by his remark on the houses in Bedford Row, quoted as something to be sneered at. I will direct his attention to the Episcopal Palace, Durham, as a building of the olden time, occupying a commanding site: opposite, place the Bishop's town residence, Grosvenor Square, or any other house in that *quartier*, of commanding exterior; then, if the deep relief in the mouldings of the former, occasioning that immense and truly grand variety of light and shade, cannot touch his inner man, or if he "cannot discern any superiority of any kind" in it, although that supreme judge, the eye of the public, has decided in its favour, let him persist in preferring his two-inch relief stuccoed pilaster and cornice.

Rendering to all their due, and proving that I am neither Christian, English, nor Goth alone; also, that improvement has of late years taken place with respect to public buildings, I will select for your cognisance that meagre and paltry attempt at restoring the Gothic, the Guildhall of the city of London, with that *chef-d'œuvre* of the Grecian in this country, Birmingham Town Hall opposite (the merits of which have been so fully developed in this work). You will agree with me, that "Birmingham wins in a canter." But, with respect to private houses, Why, I ask, are you discontented with brickwork? For, as the hair of a countryman, left to its natural resources, exceeds in duration that of the fop who uses Rowland's Macassar, or other stimulant, however attractive it may be for the time, so far shall such houses as those in Bedford Row exceed in duration of material, and preserving their external appearance, those of "West Strand" and Regent Street, those summits of perfection to the stucco lover.

There are a few stone houses in Lombard Street and elsewhere, of probably a century and a half standing, which will in age overtop them all; such, at least, the probability is; and this it is which, being generally known, causes the builders to imitate it with a composition so frequently seen in the principal streets of London, cajoling the house-hunting public with the idea that it is equally lasting as stone; when, in the course of the first sharp winter, they will one morning rise and find all the mouldings and more prominent parts lying shattered in the area of the basement; then the deluded wights too late perceive their error. "Had London houses been built to endure for ages, all their original defects and inconveniences would have been perpetuated." (See p. 297.) The material ones, no doubt: but who can boast of finding one half the number of internal inconveniences in a house of the Tudor and Elizabethan period, that are to be found in a house bearing the cognomen of "first-rate" in London; the walls of which are half the thickness, and carried up three times the height, of the former; so that, setting aside the staircase, and the necessary absence of closets in the walls of such rooms, if it should be a corner house, what think ye of smoky chimneys, occasioned by the damp inhaled by a brick-and-half wall? Such, with various other matters, are the advantages of the present rage for street building in London.

Where is there to be found a self-interested person who would not willingly attempt to preserve some preposterous Anglo-Grecism of his own? If any one should happen to say, "Architects have every reason to bless the window tax," and that attempting to obtain more light is a "preposterous fashion," I should at once say, "Behold the man." You may undoubtedly have as much window as you please, provided you make a proportionate solidity of base, and do not commence nearer the angles than would be *in keeping* with the height of the house; as, for example, "Burleigh House," Lord Exeter's, near Stamford, and a wing of Wilkins's National Gallery, or other such naked affair. Which has the preeminence? Judge ye. — *G. B. L. July* 11. 1837.

The Encyclopædia of Cottage, Farm, and Villa Architecture. — We are frequently gratified by letters informing us of the good which this work has done in creating a taste in proprietors for having better cottages and farm-houses on their estates; but we also receive occasionally (and it is surprising that this is not the case oftener), letters of a contrary description. We lately received one of these letters from a gentleman, a wealthy merchant in a country town, who, intending to build a country house, procured the *Encyclopædia*, and, as he informs us, looked over all the designs it contains without finding one which would suit his purpose. He therefore finds fault with us for undertaking to write a work which, being entitled an *Encyclopædia*, ought, he thinks, to have given him all the information he required. As this gentleman gave us his name and address, before answering him, we submitted a copy of his letter to an architect of great experience, and of whose sound sense we have a high opinion, and we give the following extract from the architect's letter here, because we think it calculated to be useful both to the purchasers of architectural books and to architects: —

"Mr. ——'s expectations of what your book ought to contain remind me more than anything else of the description of Utopia, where the pigs run about ready roasted, crying, 'Come eat me! come eat me!' In like manner, he would have houses to suit exactly every possible taste or caprice, arranged like pies in a pastrycook's shop, 'Come build me! come build me!' I suppose he expected to have nothing else to do but tear a leaf out of your book, and put it into the hands of his builder, to procure an estimate and set to work. But, jesting apart, I do think, although there is some truth in several of his remarks, that he has rather overstepped the bounds of legitimate criticism. In fairly judging of the merits of any work, every person of candour will take into account the circumstances and difficulties attending the undertaking, and pronounce sentence accordingly. Your *Encyclopædia of Architecture* commenced a new era in publications of the kind: the trouble, difficulty, and risk, attending a work of that nature, must have been immense; and, with me, the wonder is, not that the work is not superior, but that, under all the circumstances, it is half so good. It is much easier to criticise works than to get them up. The talent of finding fault is one which is pretty generally diffused, and seems not likely to grow rusty for want of using. Again, if I understand the object of your *Encyclopædias*, both of *Gardening* and of *Architecture*, it is to lay down, in as familiar a manner as possible, the principles of each art, as derived partly from nature, and partly from the conventional ideas of taste and convenience prevalent in society; and to illustrate these principles by examples. Now, in respect to gardening, nature being uniform and constant in her operations, generalisation is much more easy, and the precepts and examples given will be of all but universal application. Far different, however, is the case as it regards architecture. Even supposing general principles to be agreed on, the 'wise saws,' when applied to 'modern instances,' are liable to such a variety of modifications from circumstances beyond control, from whim, caprice, taste, and the ever changing fluctuations of fashion, that all the volumes ever written on the subject from the time of Vitruvius to the present day would be insufficient to suit a tithe of the cases which are every day recurring; and, admitting that the examples given in your book are some of them mediocre, and others below mediocrity, 'gimcracks,' or any other opprobrious term that a disappointed man may apply to them, still the great end is gained; viz. that of *furnishing ideas*, giving hints, and teaching the reader to reason from the general principle to the particular example. The very faults of the designs will do this as much as their beauties to any person who will give himself the trouble of thinking. I apprehend your book was never intended to make 'every man his own architect.' A man, of course, may be so if he pleases, as he may be his own lawyer or his own doctor; but, in each case, he will probably have to pay for his experience, and deservedly so. I will give you an instance of what I consider the legitimate use of your *Encyclopædia*. A gentleman in this neighbourhood, wishing to build a villa, was recommended to me. He had read your work, and, consequently, could give me some notion of what he wanted (which, by the by, is not always the case). He pointed out one of the designs as having pleased him. I saw at once the points which had struck his fancy, and took care to preserve these in my design, although in other respects it was totally dissimilar. The consequence was, that my first sketches submitted to him gave such satisfaction, that I had no occasion to alter a line, except the size of one or two of the apartments.

"A great deal of the information as to matters of cost required by your correspondent would be better obtained from the *Builder's Price-Book* than from any other source. In my opinion, the generality of your readers would scarcely have thanked you for substituting even for the descriptions of Deepdene and Alton Towers information as to the prices of solid and veneered doors, the difference in expense between folding and sliding doors, &c. Now, supposing that 100 or 200 pages of your *Encyclopædia* had been occupied with this sort of information; of what possible use would it have been to any reader not professional? and your professional readers do not want it. I know something of estimating buildings; and I venture to say that, if a person not practically acquainted with the subject were furnished with the price of every article in a building, he could not make a correct estimate without the knowledge of a variety of details of construction, which no books can teach him, and experience alone can furnish. Take, for example, the carved ceilings, about which your correspondent enquires: a ceiling may be carved or enriched in a thousand ways, and each mode have a different price. The cost of verandas, again, as every body must see, depends entirely on the pattern or design. But enough: '*Le jeu ne vaut pas la chandelle.*' I might go more into the subject, did time and space permit. In one word, general results are all that your readers are concerned with; and a compendious way of arriving at these would certainly be a desideratum."

THE

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ORIGINAL COMMUNICATIONS.

Art. I. *The Poetry of Architecture; or the Architecture of the Nations of Europe considered in its Association with natural Scenery and national Character.* By Kata Phusin.

No. 1. Introduction.

The Science of Architecture, followed out to its full extent, is one of the noblest of those which have reference only to the creations of human minds. It is not merely a science of the rule and compass, it does not consist only in the observation of just rule, or of fair proportion: it is, or ought to be, a science of feeling more than of rule, a ministry to the mind, more than to the eye. If we consider how much less the beauty and majesty of a building depend upon its pleasing certain prejudices of the eye, than upon its rousing certain trains of meditation in the mind, it will show in a moment how many intricate questions of feeling are involved in the raising of an edifice; it will convince us of the truth of a proposition, which might at first have appeared startling, that no man can be an architect, who is not a metaphysician.

To the illustration of the department of this noble science which may be designated the Poetry of Architecture, this and some future articles will be dedicated. It is this peculiarity of the art which constitutes its nationality; and it will be found as interesting as it is useful, to trace in the distinctive characters of the architecture of nations, not only its adaptation to the situation and climate in which it has arisen, but its strong similarity to, and connection with, the prevailing turn of mind by which the nation who first employed it is distinguished.

I consider the task I have imposed upon myself the more necessary, because this department of the science, perhaps regarded by some who have no ideas beyond stone and mortar as chimerical, and by others who think nothing necessary but truth and proportion as useless, is at a miserably low ebb in England. And what is the consequence? We have Corinthian columns placed beside pilasters of no order at all, surmounted by monstrosified pepper-boxes, Gothic in form and Grecian in detail, in a building nominally and peculiarly national; we have Swiss cottages, falsely and calumniously so entitled, dropped in the brick-fields around the metropolis; and we have staring, square-windowed, flat-roofed gentlemen's seats, of the lath and plaster, mock-magnificent, Regent's Park description, rising on the woody promontories of Derwent Water.

How deeply is it to be regretted, how much is it to be wondered at, that, in a country whose school of painting, though degraded by its system of meretricious colouring, and disgraced by hosts of would-be imitators of inimitable individuals, is yet raised by the distinguished talent of those individuals to a place of well deserved honour; and the studios of whose sculptors are filled with designs of the most pure simplicity, and most perfect animation; the school of architecture should be so miserably debased!

There are, however, many reasons for a fact so lamentable. In the first place, the patrons of architecture (I am speaking of all classes of buildings, from the lowest to the highest,) are a more numerous and less capable class than those of painting. The general public, and I say it with sorrow, because I know it from observation, have little to do with the encouragement of the school of painting, beyond the power which they unquestionably possess, and unmercifully use, of compelling our artists to substitute glare for beauty. Observe the direction of public taste at any of our exhibitions. We see visitors, at that of the Society of Painters in Water Colours, passing Taylor with anathemas and Lewis with indifference, to remain in reverence and admiration before certain amiable white lambs and water-lilies, whose artists shall be nameless. We see them, in the Royal Academy, passing by Wilkie, Turner, and Callcott, with shrugs of doubt or of scorn, to fix in gazing and enthusiastic crowds upon kettles-full of witches, and His Majesty's ships so and so lying to in a gale, &c. &c. But these pictures attain no celebrity because the public admire them, for it is not to the public that the judgment is intrusted. It is by the chosen few, by our nobility and men of taste and talent, that the decision is made, the fame bestowed, and the artist encouraged. Not so in architecture. There, the power is generally diffused. Every citizen may box himself up in as barbarous a tenement as suits his taste or inclination; the architect is his vassal, and must permit him not only to criticise, but to perpetrate. The palace or the nobleman's seat may be raised in good taste, and become the admiration of a nation; but the influence of their owner is terminated by the boundary of his estate: he has no command over the adjacent scenery, and the possessor of every thirty acres around him has him at his mercy. The streets of our cities are examples of the effects of this clashing of different tastes; and they are either remarkable for the utter absence of all attempt at embellishment, or disgraced by every variety of abomination.

Again, in a climate like ours, those few who have knowledge and feeling to distinguish what is beautiful, are frequently prevented by various circumstances from erecting it. John Bull's comfort perpetually interferes with his good taste, and I should be the first to lament his losing so much of his nationality, as to permit the latter to prevail. He cannot put his windows into a recess, without darkening his rooms; he cannot raise a narrow gable above his walls, without knocking his head against the rafters; and, worst of all, he cannot do either, without being stigmatised by the awful, inevitable epithet, of "a very odd man." But, though much of the degradation of our present school of architecture is owing to the want or the unfitness of patrons, surely it is yet more attributable to a lamentable deficiency of taste and talent among our architects themselves. It is true, that in a country affording so little encouragement, and presenting so many causes for its absence, it cannot be expected that we should have any Michael Angelo Buonarottis. The energy of our architects is expended in raising "neat" poor-houses, and "pretty" charity schools; and, if they ever enter upon a work of a higher rank, economy is the order of the day: plaster and stucco are substituted for granite and marble; rods of splashed iron for columns of verd-antique; and, in the wild struggle after novelty, the fantastic is mistaken for the graceful, the complicated for the imposing, superfluity of ornament for beauty, and its total absence for simplicity.

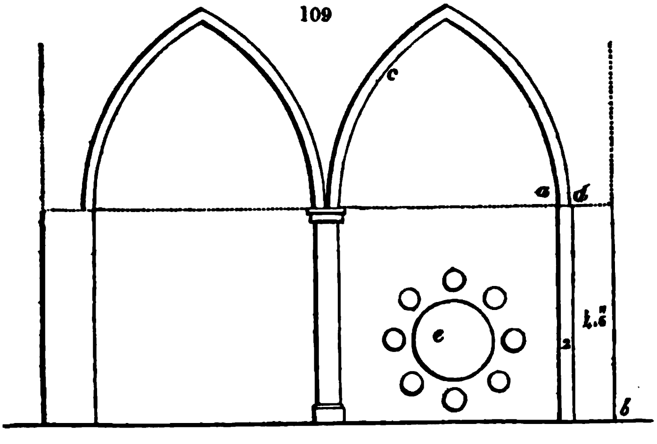
But all these disadvantages might in some degree be counteracted, all these abuses in a great degree prevented, were it not for the slight attention paid by our architects to that branch of the art which I have above designated as the Poetry of Architecture. All unity of feeling (which is the first principle of good taste) is neglected; we see nothing but incongruous combination: we have pinnacles without height, windows without light, columns with nothing to sustain, and buttresses with nothing to support. We have parish paupers smoking their pipes and drinking their beer under Gothic arches and sculptured niches; and quiet old English gentlemen reclining on crocodile stools, and peeping out of the windows of Swiss chalets.

I shall attempt, therefore, to endeavour to illustrate the principle from the neglect of which these abuses have arisen; that of unity of feeling, the basis of all grace, the essence of all beauty. We shall consider the architecture of nations as it is influenced by their feelings and manners, as it is connected with the scenery in which it is found, and with the skies under which it was erected; we shall be led as much to the street and the cottage as to the temple and the tower; and shall be more interested in buildings raised by feeling, than in those corrected by rule. We shall commence with the lower class of edifices, proceeding from the road side to the village, and from the village to the city; and, if we succeed in directing the attention of a single individual more directly to this most interesting department of the science of architecture, we shall not have written in vain.

Art. II. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By William Bland, Jun. Essay X. and last. *Relative to the Architecture of Chapter-Houses.*

Salisbury Chapter-House. — *Fig.* 109. represents a part of this building, which is, in form, an octagon, and its dimensions are as follows: —

109



The span from the pillar to the buttress wall is 27 ft. 6 in. The height of the pillar is 27 ft. 6 in. The height of the shaft is 24 ft. The diameter of the compound pillar is 2 ft. 6 in.; a horizontal section of which is shown at *e*, the large centre pillar having eight small pillars surrounding it, detached, however, at 1 in. distance. The diameter of the small pillars is 4 in., and that of the large centre one is 21 in. The thickness of the wall is 2 ft. The thickness of the buttress is 4 ft. 6 in. The dimensions of the masonry over the groins and crown of the arches I do not possess.

Now, in 27 ft. 6 in. there are 330 in., which, divided by 6, gives 55 in. for the true balancing diameter of the pillar; but the diameter is 30 in., therefore, nearly one half part too small, when the height and span correspond. This law applies, however, to a single series of arches and pillars; but, when one pillar is placed in the centre of many arches, as in the case before us, it being eight, then, according to experiment fig. 158. Vol. III. p. 418., the pillar is enabled to carry double the weight of a single series: consequently, the dimension of 30 in. rather exceeds the correct diameter.

The thickness of the wall, taken 4 ft. from the floor, is, as before stated, 2 ft.; and the buttresses, which are of the same thickness throughout, with only a small diminution from bottom to top, are each 4 ft. 6 in., making a total of 6 ft. 6 in.; but they diminish in breadth, after the height of about 10 ft., from 3 ft. 9 in. to 2 ft. 9 in., which, on the average, is 3 ft. 3 in.

The proportion which the dimensions of one whole buttress bears in its thickness to the balancing diameter is as follows:—In 6 ft. 6 in. there are 78 in., and the diameter contains 55 in.; therefore, the buttress equals one diameter and a half. The average breadth of the buttress is 3 ft. 3 in., or just half the thickness.

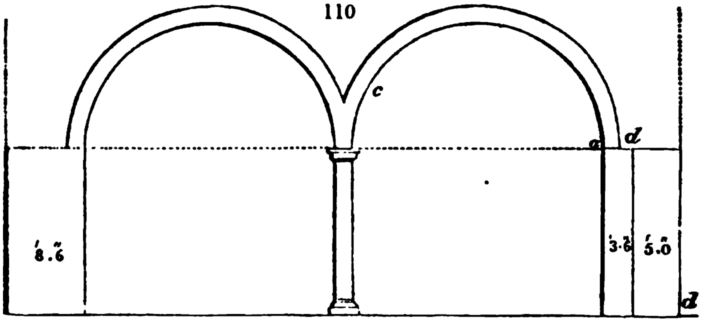
On submitting this building to the test of experiment by means of the buttress (*a b*), which is 6 ft. 6 in. in thickness, 3 ft. 3 in. in breadth, and from the floor to the springing in height, with a model on a scale of half an inch to a foot, the following were the results: — First, Without the side walls and window arches, and one foot of the arch *c d* placed upon the buttress, the other foot resting on a strong pier at the distance of the centre pillar, the arch thus situated balanced with ⅝ lb. on the top. The model buttress, as high as the springing, weighed 1¼ lb.; therefore, it would support half its own weight, when placed on the crown of the arch. Secondly, Upon adding the two adjoining window arches, springing from the same buttress, but on opposite sides, having the octagonal inclination, and completed with masonry above from estimation only, the buttress, likewise the former arch, then balanced under the weight of 2¼ lb., which, at 17 tons to ½ lb., equals 76 tons.

Notwithstanding all this, the structure is deficient in strength, since, on the immediate entrance into the interior, the eye is arrested, and the mind distressed, by the ironwork which radiates from the centre pillar to every buttress for its support. Yet this is the work of Sir C. Wren; and, on closely inspecting this otherwise beautiful piece of art, the cracks in the walls, and the inclination of the centre pillar, fully justified something being done for its security.

The dimensions of the buttresses appear to be not so much in fault as those of the walls, but more particularly of the centre pillar, which, being a compound one, is not equal in strength to a pillar composed of solid layers of stone. This is exactly instanced in Westminster Abbey, as may be seen on examining the pillars at the western end of the nave, and those nearest the screen. The former consist of solid layers of stone, and continue as upright as when first constructed: the latter, being compound pillars, are yielding to the pressure of the arches over the ailes; and therefore, being similarly circumstanced to those of this chapter-house, they are obliged to be assisted in like manner by iron bars.

Worcester Chapter-House — *Fig.* 110. represents a part of this building, which is a decagon, it having ten sides. The particulars of the dimensions are as follows: —

110



The span from the centre pillar to the buttress wall is 28 ft. The height of the pillar is 19 ft. 7 in. The height of the shaft is 17 ft. The diameter of the pillar, which is circular, is 2 ft. 4½ in. The thickness of the wall is 3 ft. 6 in. The thickness of the buttress is 5 ft. The thickness of the masonry over the groins and crown of the arches I do not know.

In 28 ft. there are 336 in., which, divided by 6, gives 56 in. for the balancing diameter of the pillar. The diameter is, however, 28½ in., therefore one half part too small when the height equals the span; but, as in Salisbury Chapter-House, half the balancing diameter is sufficient. This pillar supports semicircular arches, consequently, the true height should be a quarter part less than the span, as shown by the experiment relative to fig. 150. Vol. III. p. 410. Therefore, the height should be 21 ft.; but it is only 19 ft. 7 in., which is 17 in. within the balancing proportion; thus proving the diameter of the pillar to be nearly 3 in. beyond the necessary half balancing proportion.

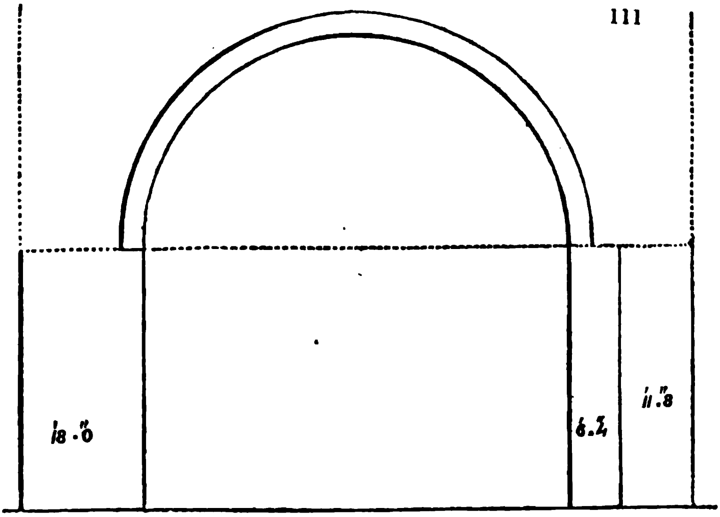
The total thickness through the wall and a buttress together is 8 ft. 6 in., or 102 in., which only wants 10 in. of being double of the balancing diameter. Since, however, the height of the springing is 17 in. too short, this circumstance will allow of 3 in. reduction in the diameter, thus leaving but 4 in. within the double balancing diameter. The breadth of each buttress is 2 ft. 6 in., or 30 in., which rather exceeds one quarter part of the thickness: their thickness from the ground to the top diminishes at regular distances.

Experiment, with a model of half an inch to a foot, proved that the wall and one buttress, under the same conditions as those first mentioned relative to Salisbury Chapter-House, balanced under the weight of ¾ lb. on the crown of the arch; and, under the second conditions, with the two adjoining window arches added, 2¾ lb. were required to bring the buttress to the balancing point: in the latter experiment, the window arches and buttress were completed with masonry above, according to estimation. These tests give a decided superiority of strength in favour of Worcester over Salisbury Chapter-House. This fact is confirmed by Mr. Dolvere, the verger, to whom I am particularly obliged for his kindness in sending me the dimensions, and who informed me that the building is perfectly sound.

Let me here again observe that this centre pillar is single, and composed of successive layers of stone to form one circular shaft, from the capital of which the ten several arches spring.

York Minster Chapter-House.—*Fig.* 111. represents a part of this building, which is in form an octagon, it having eight sides.

111



This beautiful structure is so far different from the two former chapter-houses, that, instead of having the roof supported by a single centre pillar, it has none at all. For the dimensions and other particulars, I am greatly indebted to Mr. Taylor, mason at the Minster, as well as for his kind offer of farther information. The dimensions are as follows:—

The span from buttress wall to buttress wall is 62 ft. 6 in. The height to the springing is 38 ft. 3 in. The thickness of the wall is 6 ft. 4 in. The thickness of the buttress is 11 ft. 8 in.; these two latter making a total of 18 ft. The height of the masonry over the groins and crown of the arches I have not been able to ascertain.

Now, 62 ft. 6 in., divided by 6, gives 10 ft. 5 in. for the balancing diameter; but the wall and buttress are together 18 ft., therefore 7 ft. 7 in. greater. The wall and buttresses support semicircular arches, which will require, as in the case of Worcester Chapter-House, a quarter part less than the span for the balancing height. The height of the springing of the arches should then be 47 ft., but the springing is 38 ft. 3 in., and, in consequence, will admit of the diameter of the pillar: but here the wall and buttress are reduced in thickness 1 ft. 5 in., allowing 2 in. in every foot of height, or one-sixth, which gives for the true diameter 9 ft., and which sum doubled equals 18 ft.; thus corresponding exactly with the thickness of the wall and buttress together. The width of each buttress is 6 ft. 4½ in., or a little above one third of the total thickness.

Under experiment, on the same scale of model as before employed, an arch placed with one foot on a buttress up springing high and 18 ft. thick, having the other foot placed firmly on a block the same height, balanced with 3½ lb. on the crown. The weight of the model buttress equalled 10 lb. With the two window arches adjoining the buttresses all completed, as in the preceding chapter-houses, it then balanced under the weight of 8 lb. Mr. Taylor, in his answer to me respecting the soundness of this chapter-house, says that "the building is perfectly sound, not giving way in the least."

Upon reconsidering these chapter houses, there appear to be three faults in the proportions of the one at Salisbury, which the other two are free from:—

First, The centre pillar, being a compound one, is not of sufficient solidity to carry the weight of the arches without yielding.

Secondly, The walls are not of that substance, being only 2 ft., to counteract any yielding of the buttresses, caused by the insufficient strength of the compound centre pillar.

Thirdly, The buttresses belonging to Salisbury Chapter-House, in the squares of their bases, possess as much materials as those of Worcester Chapter House; but, being put together in too square a form, have not the power of counteracting the outward thrust of the incumbent arches equal to those above named, as proved by several experiments in the foregoing essays.

In order to repair this chapter-house and remove the iron-work, I would humbly suggest the following:—Let the centre pillar be cased with stone laid in Roman cement, the whole being made solid, and enclosing in its depth at least half the thickness of the small pillars, if it be considered more ornamental to retain them, having irons about every 3 ft. in height secured in the centre pillar, to keep the outside work firm in its place. Again, the groins immediately over the pillar, and over the several buttresses, should be made solid, if not already so, by brick or stone-work set in cement, and carried up high enough to prevent any further yielding of the groins or voussoirs, so as in both cases to produce the same strengthening effect, as shown in experiment fig. 67. Vol. III. p. 206.

After allowing time for the whole to be settled, the ironwork, I am strongly disposed to believe, might then be safely removed; taking every precaution, however, to avoid jarring.

Having arrived at the termination of my enquiries, and given a sufficient number of examples to illustrate my theory, I cannot close the subject without expressing my humble opinion respecting the origin of Gothic architecture; namely, that so much beauty, taste, skill, and sublimity, so far from being the work of a barbarous people, was the fruit of the accumulated industry, reflection, experience, taste, and skill of highly civilised and talented men, who were influenced in the choice of forms and ornaments not only by the climate of England, but by the religious and noble feelings of human nature.

Hartlip, Nov. 1835.

Art. III. *Candidus's Note-Book.*

Fasciculus IX.

> " Sicut meus est mos,
> Nescio quid meditans nugarum; et totus in illis."

I. The portico of St. Martin's Church has lately undergone the process of *churchwardenising*, with the usual success attending thereon. I know not whether any of the newspapers (which, a year or two ago, raised such an outcry when it was imagined that the view of it in one direction would be completely intercepted by the portico of the National Gallery, have protested against, or even noticed, what has been done; but, if not, their sympathy for it must now have been succeeded by complete indifference, otherwise they would most certainly have reproved, in unsparing terms, the barbarism of inserting iron railing, of the most clumsy design, between the columns, and in such manner, too, that the shafts of the latter are partially hooped. Thus, a very considerable expense must have been incurred for little other purpose than that of wantonly disfiguring the part of the edifice which chiefly, I might say, alone, deserved admiration. As a means of precaution, surely such an enclosure of the portico cannot be at all more necessary now than it has hitherto been; especially as the situation is rendered so much more public than it formerly was. Even were it imperatively called for by the increasing Vandalism of the "rising generation," a low railing, between pedestals, at the bottom of the steps, would have been a sufficient protection, and even a better one than that which has been adopted; inasmuch as it would have prevented persons from approaching the columns at all, which at present they can do; and consequently scribble upon, cut, or otherwise disfigure them, if so disposed. Considered as a mere innovation, I do not object to what has been done; but solely on the ground of its being an exceedingly tasteless one. To say the truth, much might be done in the way of innovation here, which would also be improvement: for instance, were a lofty centre doorway substituted for the ugly, low, arched one; were the window above it walled up, in lieu of which light might be admitted into the vestibule through panels of rich open metal-work in the door; and were the rusticwork removed from the other doors and windows, or rather, quite new dressings bestowed upon them; all these would be decided improvements, and the parts within the portico would harmonise tolerably with the order. As to what has been actually done, it strikes me as, whether so intended or not, having no other merit than that of a desire to treat the Church and the Gallery as nearly alike as possible; and they are now both well railed — the one railed *in*, the other railed *at*.

II. Much as has been lately written respecting the comparative merits of Grecian and Gothic architecture, it has not, I believe, been remarked, that it is easier to keep up the character of the latter throughout the whole of a design than that of the other. Not only does the Gothic style abound in striking and diversified features capable of entering into innumerable combinations, but of such as diffuse themselves over every part; whereas, in Grecian architecture, at least in the modern application of it, the essential character of the style is nearly confined either to a portico or some other disposition of columns. With that it may almost be said to begin and terminate; for whatever else is added to it is of a different and very inferior stamp. Hardly is it possible to keep up the same tone, still less to increase it. It certainly cannot be accomplished by means of windows, which, even when most happily introduced, and made to contribute to embellishment, are apt to interfere with and disturb, and certainly do not heighten, the impression produced by columns and their immediate adjuncts. Whereas, in the Gothic style, and every mode of it, whatever may be the richness or the expression given to any portion of the building, it may be carried to greater extent in the windows than in almost any other part.

III. It is somewhat unaccountable that so very little is to be met with that can fairly be termed architectural criticism; for the enunciation of its general principles and canons is quite a different thing from the application of them to particular instances. If this be owing, as some would fain persuade us, to modern critics being restrained by motives of delicacy from freely commenting on the works of their contemporaries, I must say that it is an exceedingly misplaced delicacy, and, moreover, that it is, in more than ways than one, injurious to the art itself. Neither can I understand why greater reserve should be requisite in exercising this particular species of criticism than any other; since, if it is to be admitted as a valid one, the same argument would apply equally well with regard to other subjects of criticism. It is said that a building speaks for itself; but so also does a work of sculpture or painting: consequently, that is a very lame and impotent excuse, amounting to no more than a confession that the critic is unable to particularise beauties or defects, and to show in what proportion they happen to exist in the particular composition he is noticing. A building speaks for itself: truly, so it does; but to whom? Most assuredly not to the public generally: at least, I have yet to learn that they are so fully enlightened in regard to architecture that criticism upon buildings is superfluous, indispensable as it may be for productions of literature and the other fine arts. It would, indeed, appear, *primâ facie*, that architecture ought to be far better understood by persons in general than any other art, since its productions stand exposed to the gaze of all; not locked up in cabinets, and there secluded from profane eyes, but thrust forth to view in our streets and highways. Undoubtedly, buildings, the exterior of them at least, are seen by all: but to see is one thing; to examine, and afterwards be able to appreciate, is another and quite different matter: and how many of those who see ever examine? let alone the ability to form a correct judgment, or even any judgment at all, afterwards. So far from being able to criticise a building, there is not one person in a hundred, or even in five hundred (of course I exclude professional men), who can, by description, convey even a tolerable idea of an edifice, though he may have been looking at it only a few hours before. If he can enumerate its principal features, without half a dozen mistakes, you may set him down for a clever fellow, and, as matters now go, as being tolerably well informed in architecture. But, should he further have noticed some minor particulars, minor as to size, yet highly important and influential in themselves, you can rank him as nothing less than a prodigy. It is but a day or two ago I was startled by hearing some one declare that the old College of Surgeons was a much handsomer and more noble looking building than the one Barry has since shaped out of it. What reasons, it will be asked, were alleged in support of such a preference? Reasons, indeed! in such cases reasons are entirely out of the question. Never are they offered, and you are always supposed to have no right to ask for them, not even though the opinion itself be delivered in the most decisive tone. In fact, in regard to architecture, ignorance and dogmatism generally go hand in hand; and the less a person knows of the subject, the more difficult it is to convince him that he is in error, or that he ought, in some degree, to mistrust his own taste. And why is it that this ignorance and dogmatism are so prevalent: and that the phrase, "Well, I don't pretend to be a judge; but I certainly know what pleases myself;" is so generally received as a most unanswerable argument? In a great measure it is owing to the utter silence of criticism, and to the merits of buildings not being canvassed at length, but hastily dismissed with a summary off-hand decision, either in their favour or the contrary, as if so exceedingly barren of interest, so incapable of affording matter of discussion, as not to be entitled to any exactness of enquiry.

IV. "It is quite futile," was lately observed to me, "to attempt to establish any system of criticism in respect to architecture; for, after all, it is entirely a matter of taste." Undoubtedly it is; yet I cannot help thinking that such a doctrine goes very much further than the party who put it forth at all intended, since it strikes at the very root of all criticism, which is chiefly concerned with taste. Admit it, and we may dispense with criticism entirely, and consign all dead critics to oblivion, and all the living ones to — starvation. Their occupation's gone for ever: they are a useless, nay, worse than useless, race; officious interfering puppies, who pretend to dictate to the rest of the world what they ought to admire, and what they should condemn. If I maintain that Hood is superior to Homer, "Jim Crow" far more humorous than "John Gilpin," that is entirely an affair of taste; and so the matter is fairly settled; for what right has any man, particularly if he makes any pretensions to good breeding, to enquire into my private reasons for so thinking, or to offer to dispute on the subject, and convince me that I am egregiously mistaken? No; let criticism be henceforth cashiered. The world has all along been grossly imposed upon, in being led to fancy that it is the province of criticism to take cognisance of matters that belong purely to taste; whereas it ought properly to confine itself to such as admit of demonstration. It would follow, that criticism has no more to do with poetry than it has with politics; and that building and engineering, steam-engines and railroads, belong to it more properly than architecture does.

How frequently do we hear people say, in reply to some objection of criticism alleged against a piece of architecture, "After all, that is merely a matter of taste;" as if taste were of little or no moment, when it is, in fact, every thing. Establish the contrary principle, acting fairly and consistently up to it, and what ensues? Why, art is at once deposed from its supremacy. At one fell swoop do we annihilate every distinction between beauty and its opposite: a mosaic pavement is no better than a brick floor; the costliest Persian carpet, of the richest design, does not at all excel a piece of drugget of the same size; since the superiority of the one over the other is altogether an affair of opinion and taste. To what is the Parthenon, or any other first-rate work of architecture, indebted for its reputation and the admiration it excites, save to the taste manifested in it? We cannot say, to its size or durability, because equal size and durability might be possessed by a structure of the plainest, not to say ugliest, appearance. Neither can we say, to beauty of material, because that brings us back at once to what is purely a question of taste. Nay, even size itself, when it exceeds what necessity or convenience demands, has no other value than what taste affixes to it; nor would it require much dexterity of sophistry to show that all exaggeration and superfluousness, in regard to size, deserve to be censured rather than admired; being only so much wasteful excess, which has no other object than artistical effect. Again, I say, introduce the *anti-æsthetic* doctrine, and see what havoc you make among reputations. The difference between the accomplished architect, the artist, and the skilful builder, is reduced to nothing; or, if any be at all discernible, it might, perhaps, in many cases, be in favour of the latter.

V. When perfectly pure and unadulterated, the "Hole-in-the-wall" (pronounce *Holenthewall*) style is, like milk and water, very good in its way; that is, negatively good. It is not calculated, indeed, to excite any connoisseur raptures; but it may be endured without a shrug. Far otherwise is the case when that innocent style is sophisticated and adulterated by an intermixture of the *soi-disant* classical along with it. It then becomes nothing less than ridiculous and disgusting. Of this, the Mariners' Almshouses at Hull might be mentioned as affording more convincing than agreeable evidence, were it not rather unfair to point out any one single example, when they occur almost *passim*, and may be met with much nearer home. In my opinion, the perpetrators of such designs merit the name of quacks quite as much as, or more than, any non-professional dabblers in architecture; who, however bad their taste may be, can very rarely indeed inflict it on the public.

VI. In his paper on Competitions, Eder charges Sir E. Cust with indulging in that figure of rhetoric termed a *bull*, when he asserts that our public buildings are below the average talent of the last thirty years. Both of them, I think, have been a little too much in a hurry; Sir Edward in not taking time fully to explain his meaning, the other to comprehend it. Had we no other means of judging of architectural talent than from executed buildings, the colonel would certainly have been caught in a blunder: but surely Eder will grant that there may be a great deal of talent and ability among those who have never had opportunities of displaying it; also, that, in actual buildings, architects are not always at liberty to act up to their own taste and feeling, or to do justice to their own ideas. On the contrary, they are not unfrequently compelled to pare down, and even cripple, their own designs to such a degree, that the character first aimed at is totally lost sight of and obliterated. Neither does it invariably happen, that it is the worthiest design which is selected for execution. Consequently, it is very possible for both our public buildings and others to be behind, if not the average talent, at least the talent which is suffered to lie dormant among the profession. The architectural exhibitions of the Royal Academy plainly enough attest such to be the case; for the most beautiful compositions are generally such designs as we have never seen realised. Among things of this description were some of those by the late Henry Parke, who was, in comparison with John Nash, "Hyperion to a satyr"; and yet we have not a single building to record the talent of the former, while the imbecility of the latter stands blazoned forth indelibly in the New Palace.

ART. IV. *On Parsey's natural Convergence of Perpendiculars.*

By CANDIDUS.

WHEN I begin by acknowledging that I have not seen Mr. Parsey's *Perspective Rectified*, and know his theory only as it has been explained to me by others, there, perhaps, I ought to stop, and not presume to impugn what requires to be accurately understood, in order to form an accurate judgment. Yet, as I cannot very well be mistaken in regard to the purport of the doctrine, although unacquainted with the reasonings and demonstrations by which its author attempts to support it, I will make bold to deny that vertical lines converge, and ought to be so represented.

Vertical lines are not otherwise affected by the laws of vision and perspective, than that they decrease in length according to their distance from the eye. Not that there is one law for vertical, another for horizontal lines; by no means: on the contrary, horizontal lines, when similarly situated with regard to the picture, that is, when they are *parallel to it*, merely decrease according to their distance, without in any degree converging. For proof of this we need only take the familiar instance of a pavement in squares, where all the horizontals perpendicular, that is, at an angle of 90°, to the picture, converge, or vanish to the point of sight; and all those which are parallel to the picture continue parallel to each other. Now, as the plane of the picture is always vertical, at least with regard to its own horizon; although, as in the case with a drawing laid upon a table, it is not perpendicular to the real horizon; it follows, of necessity, that all verticals must be parallel to the picture, and continue so in perspective: for, if not parallel to that place, they cannot be perpendicular to the horizon, but must be more or less inclined to it.

Surely Mr. Parsey must be inordinately ambitious of distinction, to aim at acquiring it by the preposterous idea he has taken up, and to which he could never have been led by his own eyes, unless his vision be altogether different from that of the rest of the world: because, if perpendicular lines converge like horizontal ones, how happens it that they do not, like the latter, appear to do so? and that the summit of a lofty building does not show itself sensibly narrower than the lower part, just as the further end of it becomes apparently narrower, when viewed obliquely? Or how happens it, again, that, supposing we stand directly in front of a long range of building, we do not perceive the horizontal lines converge from the centre, to some point on each side to the horizon, which, according to Mr. Parsey's theory, they should of course do? Therefore, unless he has adopted this last mentioned fancy also as part of his system, he has but half done his work: "*rectifying*" perpendiculars by making them *incline;* but leaving horizontal lines, when parallel to the picture, to be drawn as incorrectly as ever. Really this notable discovery of Parsey's brings us into a most perplexing dilemma; since, even were we ever so much inclined to do so, we cannot very well allow him to be in the right, without pronouncing all artists before now to have been entirely in the wrong; since all the greatest masters and all the veriest daubers, those most renowned for their achievements in perspective, and those most remarkable for their blunders, have all agreed in representing perpendiculars as vertical to the base of the picture, and all planes bounded by such lines as wide at top as at the level of the eye.

I put it, then, to Mr. Parsey's modesty, to decide whether it would not be his most advisable course to set about *rectifying*, at least reconsidering, his own theory; seeing that it is utterly at variance with the vested interests and reputations of the greatest names in art; whose productions, it would now seem, ought to have been satirised by Hogarth in his *False Perspective*, that is, were it not that Hogarth himself was, in regard to perpendiculars, as great a blunderer as any of them.

What is to be done? Are we, out of complaisance to Mr. Parsey and his discovery, completely to revolutionise that part of drawing to which it relates? And, if so, has he a second scheme *in petto* for giving the world new versions of all the pictures, engravings, and drawings, that have hitherto been produced; and which, being one and all so exceedingly fallacious and erroneous in one main particular, ought to be cancelled as monstrous absurdities? That there would be some *leetle* difficulty and inconvenience in carrying this into execution, and in bringing out new and *rectified* editions of all the works of graphic art we already possess, will hardly be disputed by any one, not even by Mr. Parsey himself. Perhaps, however, he will exclaim, "*Ruat cœlum*," let them one and all be swept away; except a few to be preserved as curious specimens of what must henceforward be an obsolete system, one fraught with error of the grossest and most unaccountable kind: especially when it is considered that, according to the principles of the new system, all lines parallel to the picture, horizontal as well as vertical ones; that is, those which are perpendicular to the sides, as well as such as are perpendicular to the base, of the picture; ought to converge, the one laterally, the others upwards and downwards, from the focus of vision, or point of sight.

I will not say that Mr. Parsey labours under very great delusion in regard to his system itself, because I do not imagine any arguments or proofs will convince him of *that*; it is quite enough that he will, *nolens volens*, be convinced he is now labouring under a most extraordinary delusion indeed, if he really fancies he can bring the rest of the world to adopt it. That is a point at which, I will venture to affirm, he may labour as long as he likes, and find it all labour in vain, a labour more difficult of accomplishment than all those of Hercules put together. In short, it is "hoc opus, *ille labor*," with a vengeance.

ART. V. *Design for a national Naval Monument; proposed to be erected in Trafalgar Square, Charing Cross.* By THOMAS BELLAMY, Architect.

THE design consists of a series of terraces, variously decorated, but all combining to proclaim its specific character. The lowermost terrace is intended chiefly to equalise the levels of the ground, but it also constitutes a very important feature by presenting an extensive platform to the entire composition. Its

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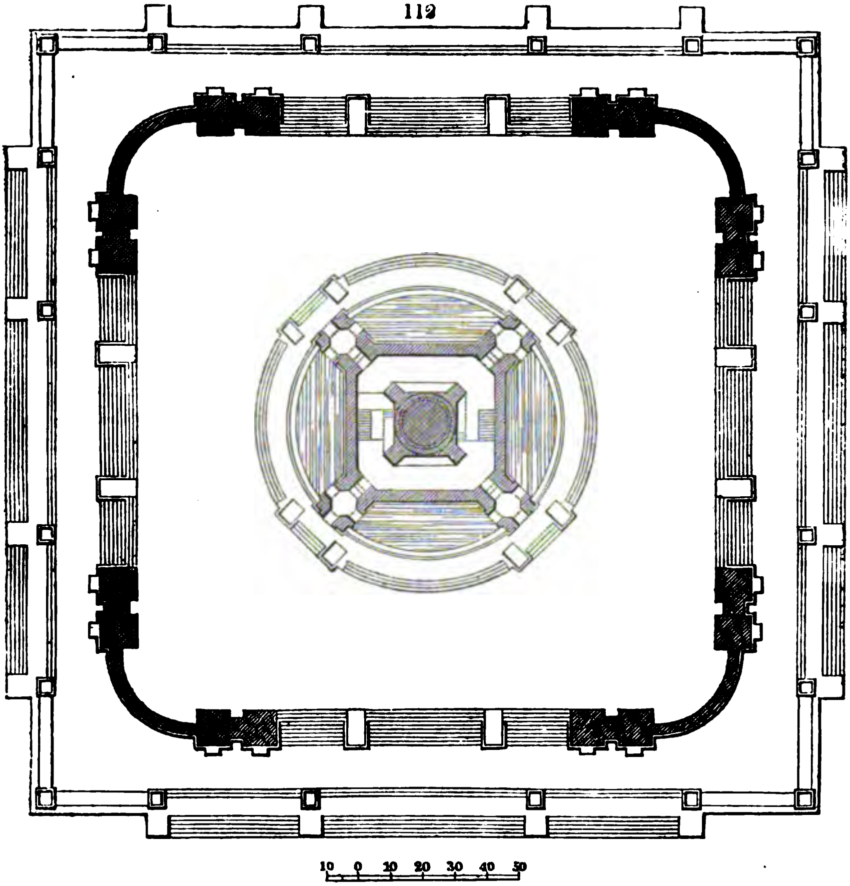
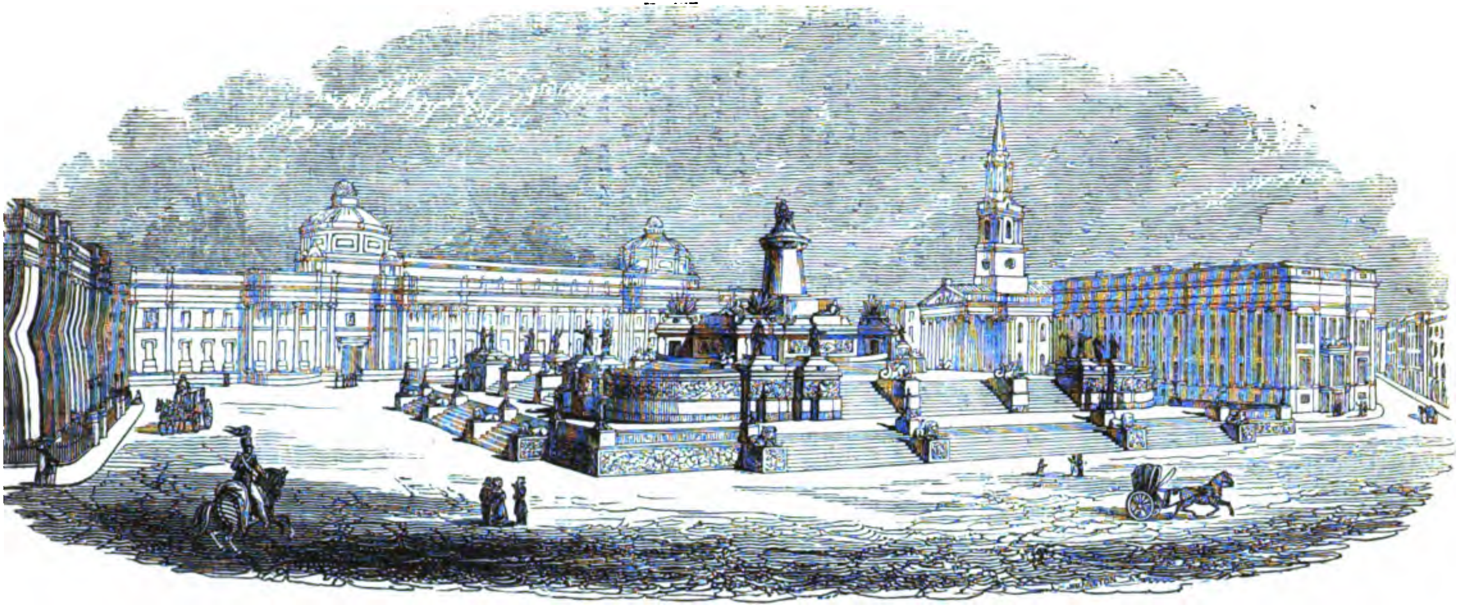


decorations are figures of reposing lions, and candelabra of bronze, charged with emblematical devices, and surmounted by spheres. The principal terrace is bounded by a breastwork and pedestals; the latter surmounted by colossal statues in bronze of renowned admirals, and bearing sculptured rilievos of dolphins, tridents, and prows of ships. The blocks dividing the steps are surmounted by sea horses. The third, and most elevated, terrace circumscribes the base of the central circular pedestal, which sustains a seated statue in bronze of His Majesty (King William IV.), and is approached through the four open pavilions, which radiate from the octangular podium or basement. These pavilions are crowned by trophies in bronze; the steps are flanked by blocks bearing sea horses. Each face of the podium between the pavilions is enriched by an alto rilievo illustrative of some signal event in the naval annals of the country, and a recumbent colossal figure characteristic of one of the four quarters of the globe. These would all be mirrored in the spacious basins, which are formed between the radiating pavilions on each face of this division of the design, and from which jets would issue so as to constitue four distinct fountains. It has been urged, as a reproach to England, that, although preeminent in arms, she boasts but few public records, either of her naval or military achievements; thus events similar to those, the commemoration of which contributed so largely to the splendour and magnificence of Rome and other capitals, have accumulated, till we find the catalogue of national victories so vast as to render it difficult to determine what particular event should be selected for illustration. The deeds of Nelson, mightiest amongst the mighty, though unhonoured to the present time, are still fresh in our memories; and Trafalgar, a name which the Genius of Victory registered with him at his death, lingers on the ear of those who glory in "The flag that's braved a thousand years, the battle and the breeze." Of late, the government has manifested a desire to perpetuate the remembrance of Nelson, by assigning to one of the most conspicuous features of the recent improvements the name of his last victory; but, whether this may be hailed as the prelude to any ulterior object, is not generally known; or whether Trafalgar Square, like its neighbouring Waterloo Place, is destined to be commemorated in name alone. That so large an area as the square in question should remain altogether unappropriated is highly improbable; and yet it would, perhaps, be difficult to quote any situation less available for a public edifice of magnitude; not as regards its eligibility for any particular structure of itself, but as the erection of such a structure would affect those buildings in its immediate vicinity; and, for this reason, a public edifice, to be suited to that situation, for would require to be of colossal proportions, in order that it might, as a central feature, take its proper place with relation to the surrounding buildings. This would carry with it the complete obstruction of the views of those objects which combine to render this quadrangle by far the finest in the metropolis. The accompanying design, at the same time that it contemplates an appropriation of the square in a manner void of objection on the grounds previously stated, is intended to convey an idea of a national monument to the naval glory of England. Its arrangement would enable the country, by trifling parliamentary grants from year to year, to do justice to the heroic deeds of her naval sons, by rearing imperishable statues to their as imperishable fame. A monument consecrated to such a purpose would, in the language of the inscription given on the French Pantheon, be "the offering of a grateful country to her illustrious men;" and the future hero, whilst meditating on its terraces amongst



the statues of departed greatness, would be stimulated to deeds that should entitle him to so honourable and so enviable a reward.

It was the author's wish to have introduced as an accessory to the picture, a view of the approved *façade* of the National Gallery as designed by Mr. Wilkins; but, upon application to that gentleman, he was unwilling to allow a sketch to be made from the model for that purpose. The design, therefore, which appears in the view, although strictly adapted in all its dimensions to the site selected for that edifice, and to the peculiar provision which it demands, is only substituted, from necessity, for that which is about to be carried into execution. (Copied from the engraving sent to us by Mr. Bellamy.)

London, Charlotte Street, Bedford Square, Sept. 23. 1837.

" There has been of late much discussion as to the manner in which the open space in Trafalgar Square, opposite the National Gallery, should be disposed of; but it seems to have been wholly forgotten that Parliament voted last session a sum for laying out the ground in question according to a design furnished by Mr. Wilkins; although we are not prepared to say that this design has been *altogether* adopted. The plan of Mr. Wilkins proposes to level the square northwards, taking the pathway from the General Post-Office to the Union Club as the level. Of course, as there is a considerable hill or rise towards the National Gallery, the roadway north of the square and part of the building would then stand as a terrace, about 8 or 9 feet high. Mr. Wilkins proposed to descend from that road into the square by a flight of steps, the full width of the portico; so that, from Charing Cross, the building would, to the eye, have connected itself with those steps and the basement wall right and left of it. The square would be surrounded by a balustrade, and the slope of the sides would have been provided for by gradual and easy descents. There is no intention whatever to plant trees in front of the National Gallery; and, in connexion with this part of the question, we may mention that, although it has been suggested in the public prints that the centre of the square would be a suitable site for the erection of a monument to Nelson, and notwithstanding that a fund for the erection of such a monument is, we believe, in existence, the Government have no control whatever over that fund."—(*Observer*, Sept. 24. 1837.)

" I see, by a letter in *The Times*, that it is proposed to enclose the now open part of Trafalgar Square, and make a shrubbery and walks for the amusement of nursery maids and children. Whether this is to be accounted for by a total want of taste in those who have the direction, or whether it be intended as a sort of companion to the very ugly building called the National Gallery, I cannot inform you; but I beg to suggest (and request you to support) a much better finish for this fine opening; namely, to have a fountain and *jet d'eau* in the centre, as at St. Peter's in Rome; and, if a sufficiency of water cannot be had to keep it constantly going during the day, then to open the jet (as in the Palais Royal, Paris) for some hours every day. — *G. C. Sept.* 13. (*Times.*)

ART. VI. *A Design for a small Cottage Villa.* By W. S.

FIG. 114. *is a Plan of the Ground Story,* in which *a* is the hall, approached by a flight of steps through the entrance door in the centre, and lighted by two windows, one on each side of the

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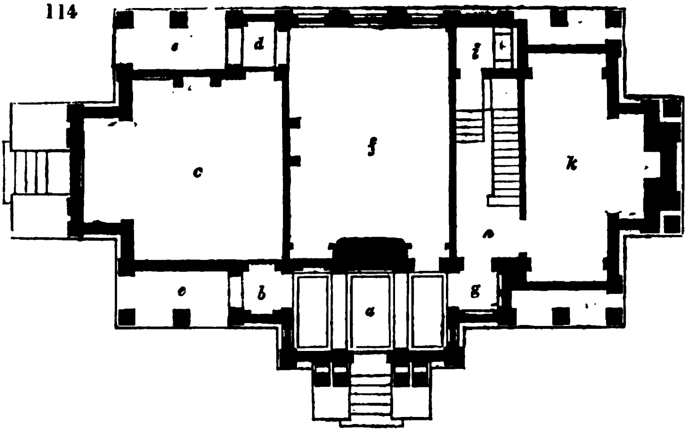

door, the ceiling being paneled as shown. On the left of the hall is a small lobby (*b*) leading to the drawingroom (*c*). This room has a recess on the side, with a folding casement to the floor, leading to the lawn; on the opposite side to the entrance is the fireplace, with two other casements; the one on the right leading into another lobby (*d*), corresponding with the first-named lobby, and communicating with the dining-room; so that any person may pass from one room to the other, without the necessity of going through the hall. Under the colonnade, or covered way (*e e*), a few plants might be placed, which would have a pleasing effect viewed from the drawingroom; and, through the lobby *d*, from the dining-room: *f* is the dining-room, with three windows at one end, and a doorway at the opposite end, leading into the hall. Through the lobby *g*, corresponding with the one at *d*, on the opposite side of the hall, is seen the staircase *h*, under which are the steps to the domestic offices in the basement: there is a water-closet at *i*; *k* is a library, with recesses for books at each end; and on the side is another large recess (with the fireplace), over which is a lantern. This method of lighting a library is considered best; as, from there being no view outwards, the mind is not likely to be disturbed by passing objects; and it leaves all the walls unbroken for the arrangement of bookshelves, maps, &c.

Fig. 115., *First Story.* — In this plan, *a* is a landing, from which the doorway on the right leads into the maid-servants' bedroom (*b*), over part of the library; and on the left is an archway to the passage *c*, with a skylight above: *d* is a bedroom over the dining-room; and *e* is another bedroom, over the drawingroom: *f* is a storeroom and closets, or a small bedroom, over part of the hall. Should more bedrooms at any time be required, they may always be obtained, at a very trifling

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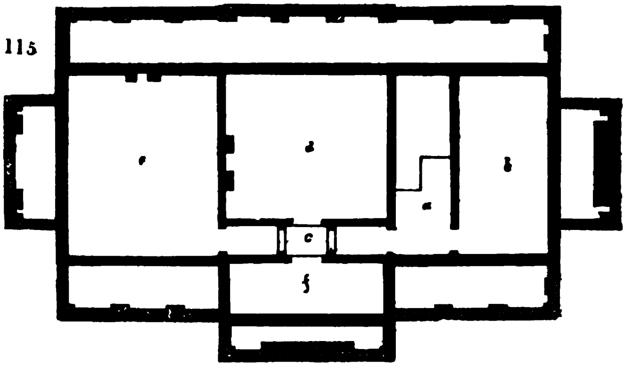

expense, by raising the building another story, or by merely raising the centre part only, in which two good bedrooms might be formed.

Fig. 116., *Basement Story.*—In this figure, *a* is the staircase; *b*, the footman's pantry, with recess for bed (*c*); *d*, knife and boot-

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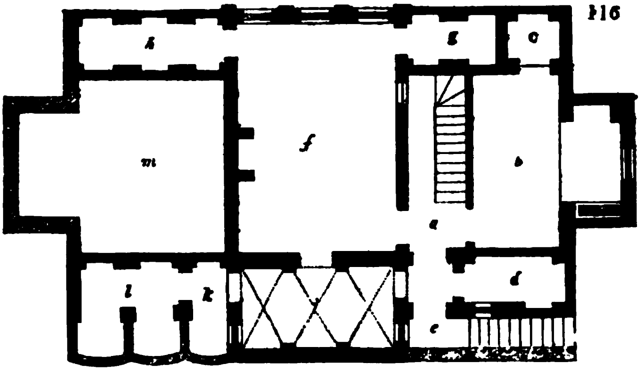

room, close to which is the entrance from the area (*e*); and on the opposite side of the staircase is the kitchen (*f*), with an entrance to the larder (*g*), to the coal and wood cellar (*h*), and to the scullery (*i*), which has a groined ceiling: *k* is a beer cellar; and *l*, wine cellars; *m*, foundations of the drawingroom above; or a good maid-servant's bedroom might be formed there.

Figs. 117, 118, and 119. are elevations of the three fronts. *Fig.* 117. is the entrance, with a colonnade on each side; *fig.* 118. shows the folding casement leading from the drawingroom; and *fig.* 119., the outer wall of the library. The piers I should propose to be of brick, with stone or cement dressings, except those which are grooved, which should be of stone, or covered with cement, to give a richer character and importance to those parts of the elevations.

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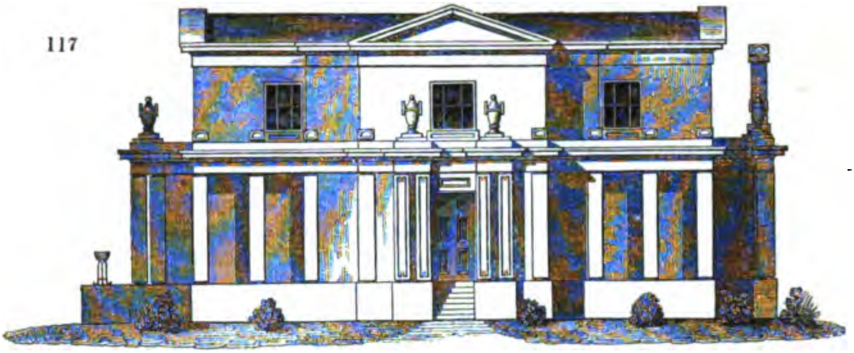

One of the greatest defects in modern villas is the want of unity of character in the different elevations; as, in most cases, the sides are nothing better than bare walls; and the back elevation has merely apertures in it for the windows, placed without any regard to regularity whatever; whilst, at the same time, the front is generally enriched with porticoes, dressings to the windows, doors, &c., presenting a great contrast to the nakedness of the other elevations. With these villas the spectator, when only viewing the front, is pleased; but, on further inspection of the whole building, he is disgusted with the want of taste in the remaining parts.

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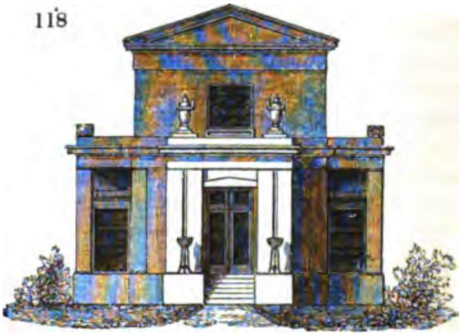

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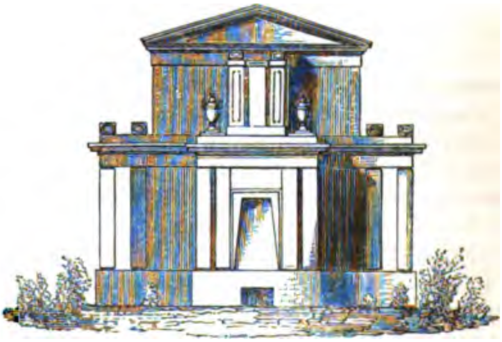

Perhaps this want of unity may, in some measure, arise in consequence of architects contenting themselves with only exhibiting, in most cases, a geometrical elevation of the principal fronts to their employers; who, not being in the habit of studying such subjects, are not able to judge of the effect of two elevations when combined together in the erection. A perspective view of a building, however roughly it may be executed, with an enriched front, and a (or nearly so) dead wall for its side, would hardly fail to suggest to any person (even unacquainted with architecture), that something was wrong; and though, very likely, he would not be able to suggest the proper remedy, he would at least make some observation, that would oblige the artist to alter his design. The natural result of such alteration could not be otherwise than productive of good; and, as all persons who build are not wholly ignorant of the subject, probably great improvements would frequently be suggested, if a perspective view were given in all cases.

I know an instance of a gentleman wishing to erect a villa for himself in Surrey, who employed a plasterer to make him a design: he did so, taking care to have plenty of his description of work introduced; and, consequently, he crowded every order, from the Doric upwards, into the front elevation. With the drawing of the front the gentleman was delighted, expecting the other elevations would be made in some measure to correspond with it; and that, on the whole, it would be one of the finest houses in its neighbourhood: but judge of his surprise, when the building was up, to find that the sides were dead walls, and and the back elevation not much better. Had he been supplied with a perspective drawing, or even an elevation of each front, such a building, it is presumed, would never have been in existence.

In small villas of plain design, it is always difficult to keep all the elevations in character with each other, except those in the Gothic style, where the chimneys are generally made to project boldly from the main walls, and are finished with ornamental tops. If, in other styles, a similar method were adopted, it would have a good effect; and, in such small erections, too much care cannot be bestowed on the design for the chimney tops, as they form, or at least ought to do, one of the principal features of the building.

Although this design partakes of the classical style, still, I prefer the Old English, or Gothic; as it must be acknowledged that it is more pictorial; and, with a little modification, as suitable to the various wants of the times. Indeed, I am surprised it has not been much more introduced into our streets and villages, as, with a little attention, it would give them some character; for it is to be observed, that it allows of each individual exercising his own taste as to decoration, without creating so great a contrast as in the classical style. The general forms being similar in outline, and strict uniformity in the parts not being necessary, more improvements would be likely to take place, with less chance of having an ill-assorted motley collection of buildings.

This style is capable of much enrichment; and, in street houses, there are plenty of opportunities for the architect to exercise his abilities in that branch of his profession, by introducing sculptured ornaments, bearing something indicative of the trade of the owner, or the manufacture of the articles which he may have to sell. Not that it is to be wished to see such monstrosities as Lander's blacking shop, near Temple Bar; though, taking into consideration that the idea is original, perhaps it is entitled to as much regard as many buildings of greater pretensions, where columns are crowded into their towering fronts, some placed apparently under weights that would, if really applied, crush them instantly, and others stuck against the walls, painted of all colours, and quite as much out of place as the gigantic blacking bottles, &c., in the instance above mentioned. The Old English style has certainly one advantage over the other in street architecture; viz. that the principal lines are vertical, which accords well with the narrow frontages; whereas the classical style is not at all adapted to the limited width of single houses, all the main lines being horizontal; the consequence of which is, that no good effect can be well obtained, unless a number of houses are combined in one design, so as to form a whole of some magnitude. And even this plan has one great drawback against its general adoption, as no one or more houses, forming part of it, could be altered or improved, or even coloured or repainted, without destroying the unity of the whole.

REVIEWS.

Art. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(*Continued from* p. 249.)

" The idea, however, which soon began to prevail among the inhabitants, especially of Italy and of France, that, in the thousandth year after his birth, our Saviour was to re-appear, and the destruction of this globe to take place, must again have produced a considerable interruption in its business, by causing a total suspension of all new sacred structures, and even neglect of those already existing, until the period of the millennium had passed by; and men, again recovering from their fright and shaking off their torpor, felt ashamed of their long neglect of holy edifices, and every where again began to repair and rebuild churches and monasteries in greater numbers, and on a grander scale than before; — in so much that in every country we find a greater number of fine churches founded in the century subsequent to the millennium, than at any other period; — witness, among many others of which the precise date cannot be ascertained, at Parma, its magnificent dome, only finished in 1106; near Venice, in the island of Torcello, the magnificent church of Santa Maria, begun by Orso Orsiolo, bishop of Torcello, in 1008; at Florence, San Miniato, begun in 1013; at Pisa, the dome, begun in 1015; at Chartres, in 1020, the cathedral was rebuilt; St. Benigne of Dijon, begun in 1005; at Toulouse, the vast church of St. Saturnin; and at old Carcassone, the lofty Lombard cathedral, founded about the same time; at Cologne, almost all the fine churches in the Lombard style which that city so justly boasts; in Normandy, at Caen, the two princely abbeys of St. Stephen, and of the Holy Trinity, built by Duke William previous to the invasion of England; and even at Jerusalem, in 1049, the repairs of the church of the Holy Sepulchre, defaced by the Saracens: indeed, in less than a century after the millennium, the rage for the crusades, by causing throughout Europe, among the great and wealthy, not only a new religious fervour, and wish to prepare both soul and body for the long and perilous journey, or to make amends for staying at home, by religious gifts more liberal than before, but necessitating a general sale, at a low rate, of domains and fiefs, that none but the clergy could purchase, for the equipment of the chiefs and the little armies which each hailed in his suite, gave to the church an augmentation of estates, revenue, and power; and, consequently, produced in every country an increase of religious structures beyond all former precedent.

" The same circumstance even caused, somewhat later, and more circuitously, an improvement in civil architecture.

" The lords bound for the Holy Land, besides alienating their domains to the church, often sold enfranchisements and privileges to the cities under their jurisdiction; and often, also, those cities took advantage of the absence of their lords, to usurp such without their consent. Generally they were supported in their usurpation by the sovereign, anxious to create a new body that should counterbalance that of the barons: and as, in these cities, industry and wealth increased with independence, their rich citizens and their municipal government began to want, and to erect, edifices for civil purposes, extensive and magnificent. From the cities of the Adriatic, and in Lombardy, where commerce, wealth, and a municipal administration first developed themselves, and where we see the first magnificent town-halls, we can trace that species of buildings somewhat later, to the cities in Germany, called Imperial, because wrested from the jurisdiction of the great vassals, and only holding from their common chief, the Emperor; later still, from thence to those of Belgium; to Bruges, Ghent, and Antwerp; and last of all, to Holland, and to Amsterdam. Indeed, while in other countries the barons, even when at home, continued only to reside in the castles on their estates, widely aloof from the vulgar contamination of the cities in the little commonwealths that by degrees grew out of the wrecks of the Lombard kingdom, the smallness of the state, and the greater security of the capital, began sooner than elsewhere to make the nobles themselves abandon the sullen seclusion of the country for the advantages of the city, and to erect the tall towers — the last distinguishing mark of their superiority — in the very midst of the lower dwellings of the citizens. Of these towers, Bologna still preserves a few, and Pavia a whole host.

" It may be asserted, that in the place whence freemasonry drew, if not its first existence and form, at least its vital breath, its all-pervading energy, in the shape of those papal bulls addressed to the whole of Christianity, and received with obedience by every part of it which owned the supremacy of the Pope, it influenced the further developements of sacred architecture in the smallest degree. Rome had gone on declining more and more in internal means and population. The immense basilicas built on the first burst of Christianity out of the remains of heathen temples, had themselves ceased to be wanted for the diminishing congregations. Grass had grown on their pavements, and weeds had started from their walls. A few of the larger, rendered conventual, might have had monasteries and cloisters added to them; a few smaller new churches might even have been erected within the immense precincts of the ancient city, for local convenience; but the only universal addition in Rome to the former sacred structures, was — after steeples had begun to spring up in the seventh and eighth centuries — that of one of those appendages to each of the old churches; and in Rome, whatever had been the original style of architecture, or that of the subsequent alterations in those churches, we may say that their steeples offer the same form, and bear the stamp of the same age.

"Within the boundaries of the Greek empire, the freemasons, fraught with bulls of the popes of Rome, found no access whatever. In the Greek church the forms first established seem to have been preserved with little variation to the present day; and I may add, that the regions in and out of Europe, which became subject to Mohammedan powers, though they seem to have derived much of their architecture from Constantinople and from the Greeks, appear to have borrowed little from Rome, or from the freemasons. On the contrary, in Spain, over the greatest part of which Mohammedan sovereigns reigned during several centuries, the Christians themselves imitated their first style of architecture, in a great measure, from the Moors. The principal buildings of the middle age are quite in the Mohammedan style of the country; and it was only after the Catholics had acquired a manifest preponderance over the Moors, that we see what is called the Gothic style prevail in churches and other edifices."

Chap. XXII. *Lombard Style of Architecture.* Lombardy was not only the country in which associations of freemasons were first formed, but it was the first, after the decline of the Roman empire, to form a system of architecture, which was called by the French, the nearest neighbours to the Italians, Lombard; an appellation, says Mr. Hope, —

"Expressing the place in which this new system of Latin church architecture was first matured, and, therefore, so universally appropriate, that I shall adopt it in preference, not only to that of Saxon, first given to it in England, but without the slightest foundation,—since the rude Saxons, far from importing any peculiar architecture to the British shore, only adopted in it that of Christian Rome; but equally in preference to that of Norman, subsequently conferred upon it, which only describes the least and most circumscribed continental provinces, whence this architecture was more proximately wafted to the British shore."

The chief characteristics of this style are thus given: —

"The base of the column (the member which in general deviates least in its form from the antique, though more rude and clumsy) is sometimes a mere block, rounded at the summit, squared at the sides. The shaft, only in a few instances,—as in the small columns of Frederic Barbarossa's palace, at Gelnhausen in Germany,—tapered; in general equal in diameter from the root to the summit; the height with any fixed proportion whatever to the diameter. Where (as happened in the North) materials less compact, require, for strength, greater circumference, the columns sometimes appear a short thick trunk, as at old Carcassone, Norwich, Gloucester, and Durham, &c.; but these have been found to be mere cases of squared stones, of which the interior is filled up with mere rubbish, or small stones bedded in mortar. Where materials are more compact, or columns merely stand as ornaments before a wall or pier, the shaft often grows to a tall slender reed, or seems to be a rope descending from the cornice; as in the front of San Michele at Pavia, and of the dome at Piacenza. Sometimes the shaft reaches, uninterrupted, from the base to the capital; sometimes it is, by rings of intervening mouldings, confined to the circumference of each shaft, or carried on string courses from shaft to shaft, divided into different articulations ere it reaches the capitals."

"Of columns and pillars in Lombard edifices, the capitals were, at first, only rude imitations of the Doric, or Corinthian, or Composite: in the ancient Lombard church of St. Gravier, near Aix, pilasters, capitals, and cornices are rudely imitated from the Roman; in the nave and north porch of Autun, they are much better sculptured; the capitals inside St. Apollinaire at Valence resemble the Corinthian very closely; the pilasters in the church of Autun, of which the style is Lombard, are in the proportion of the Composite, and fluted, while the capitals are formed of monsters. Afterwards they were made to offer spear heads, or foliage, or scroll work, more variously disposed; as we may see in churches and cloisters innumerable, in Italy, France, Switzerland, Germany, and England."

"Where walls are not adorned with columns, they commonly, and sometimes, but more rarely, where they are, have their surface divided into recessed panels, and their corners strengthened by a species of margin, or buttress, slightly projecting, which at the top connects and grows into one of the range of corbel tables, forming wall plates, made in almost all buildings in the Lombard style, save the absides of the dome of Verona, to mark every new floor, into which is divided the height of the edifice."

(*To be continued.*)

Art. II. *A Lecture on the Dry Rot, and on the most effectual Means of preventing it; delivered before the Institute of British Architects, April 3. 1837.* By Robert Dickson, M.D. F.L.S. Pamph. 8vo, 50 pages.

"In all cases where wood is wished to be durable, it must be submitted to processes which have hitherto been tedious, and attended with the loss of capital, thus rendered inactive during the years which were required for their completion. These processes are termed seasoning and drying; which are accomplished either by the natural powers of the air, to take up, and carry off superfluous moisture from any body which will readily part with it, or by immersing the timber in water, which dissolves out the mucous and other viscid soluble principles which have a tendency to retain much of the moisture, and thus permit the more speedy evaporation of the watery part, upon the removal of the timber to a dry atmosphere, where there is a free circulation of air, by which the process is expedited; or, to render it still more expeditious, recourse is had to boiling or steaming, the higher temperature rendering the solution of many of the principles more easy.

"Of all these means steaming appears to be that which facilitates the process to the greatest degree, 'the seasoning going on more rapidly after the piece is steamed than when boiled.' (*Barlow on the Strength of Timber*, p. 14.) By all of them a loss of weight is occasioned. Steaming, or boiling, 'impairs the strength and elasticity of timber:' but Mr. Tredgold thinks 'it gives another property, which for some purposes is still more desirable than strength; for boiled or steamed timber shrinks less, and stands better, than that which is naturally seasoned.' (*Carpentry*, p. 157.) The most expeditious of these processes still requires months for its completion, and the wood is generally squared before even commencing them, by which a large quantity of timber is rendered useless for the purposes of construction.

"The object of all of them is to counteract, or, more properly speaking, to postpone the operation of those causes of decay which are inherent in wood and all organised bodies. They effect this, however, in the majority of cases, in a very limited and inadequate degree; for still decay occurs, and succeeds in reducing these structures to dust and ashes."

The author next describes the different modes of decay. The first, which may be called decay by age, commences while the tree is yet standing, and extends from the heart outwards; the next is the common rot, occasioned by alternate exposure to moisture and dryness, heat and cold; and the third is the dry rot, or sap rot, which is the decay of the outer layers of wood, in consequence of the elements of which it is composed undergoing fermentation.

"It is requisite to know that each annual layer of wood is formed by the descending fibres developed by the bases of the buds situated along the stem and its branches. It requires the action of the leaves, for several successive years, upon the sap, which is conveyed to them for this purpose, to prepare those juices which are ultimately deposited in the layers previously formed, and by which the layers of sap-wood are converted into heart-wood. These principles are generally of a very insoluble nature, and confer both solidity and durability upon the parts where they are lodged. If, therefore, a tree be felled while young, there will be much sap-wood, or a large proportion of the stem will consist of the mere basis of the vegetable fabric, devoid of the principles of permanency, being, on the contrary, charged with gum, starch, or sugar, with a large proportion of albumen, and other fermentable materials, a large quantity of water being also present.

"But even the least soluble of the ordinary constituents of wood — lignin, consists of 50 per cent of water; so that there is no deficiency, in any part of the plant, of the materials of fermentation, which, when once begun, spreads with great rapidity. Nor is the alteration effected only by the play of affinities of the chemical principles existing in the timber, aided by temperature and other atmospheric conditions, but fungi and insects come to the conflict; and, under their combined attacks, complete decomposition is brought about, all trace of organisation is lost, and there remains only a mass of dry dust, similar to that which lines the sides, and lodges in the hollows, of decaying trees.

"It is unnecessary, here, either to describe the ravages, or state the signs of the presence of this malady, the real nature of which seems to consist in the fermentation of the elementary principles, — the kind of fermentation being determined by the atmospheric conditions, of which the chief is temperature; — for we know that the same material, viz., wood, and its juices, would yield by fermentation, under other circumstances, an acid. The putrefactive fermentation is that which occurs from the low temperature, — being the last spontaneous change which organised bodies undergo when deprived of life, 'that mysterious principle which compels all the powers of decomposition to obey its call, to change their nature, and to become powers of recomposition.'

"This overmastering spell being dissolved, the ordinary laws of chemical affinity again come into operation, and by their means a compound body is reduced to its simple elements.

"This series of actions occurs most readily where the elements are numerous; hence substances containing four principles generally putrefy more rapidly than those containing three, such as carbon, oxygen, and hydrogen, the general constituent elements of vegetable bodies; but, as albumen, gluten, and some other proximate principles of vegetable matter, contain nitrogen, these seem to play the first part in vegetable fermentation; but, when the action, however, is once begun, starch, gum, and lignin alike yield to its influence.

"From all which circumstances it follows, that the sap-wood is the part in which the decomposing operations commence; and hence the propriety of the term *sap* rot. With regard to the share which each of the destructive agents has in the whole series of actions, it is enough to state that the fermentation excited by the albumen is the primary and essential, the agency of insects and fungi being only accessory. — Insects attack vegetable structures, both living and dead, chiefly for the saccharine or mucilaginous principles which they contain, and aggravate the evil, principally by hollowing out the substance, and permitting the access of air and moisture; but the part performed by fungi is more obscure, and hence numerous erroneous notions exist respecting them. Some have thought that they were examples of equivocal generation, — an opinion which receives no countenance from any one who has carefully studied their nature, or the mode of their production. The minuteness their reproductive matter allows them to escape observation when scattered; but this is always prepared in definite and fixed parts of the structure of those already existing, as much so as that of the seed of a rose or of an apple; but their number surpasses that, probably, of any other vegetables, — while their sporidia, or reproductive particles, can retain the power of vegetating as long, probably, as any seeds."

"It appears to me, therefore," Dr. Dickson continues, "that the whole theory of any successful plan for the prevention of the dry rot must resolve itself into *the solidifying or coagulation of albumen.* This will at once prevent the commencement of the fermentation, which decomposes the original structures of the wood, and the developement of fungi; which are neither the cause of dry-rot, as held by some, nor the effect, according to others, but the incidental accompaniment, when their germs happen to be present in the tissues of the wood.

"Now, this is precisely what is effected by the method of Mr. Kyan; and it matters not whether he invented it, or merely extended a plan in use before, or suggested by others; for, though it was suggested, both by Sir Humphry Davy and Mr. Chapman, before he brought his publicly forward, yet he who by his energy and perseverance brings the method into use dserves to be regarded as the inventor.

"Who, because hints of such an apparatus, or rather such a power, as that of the steam-engine, may be found in the Marquis of Worcester's Century of Inventions, would hesitate to regard James Watt as its practical inventor? — But, passing this question, let us take up others of more moment. Dugald Stewart has with justice observed, that the essence of the philosophy of Bacon, and of Newton, consists entirely in 'ascertaining the universality of a fact.' It will, I apprehend, be proceeding under the guidance of that philosophy, if we attempt to ascertain how far the coagulation of albumen is attended with the preservation from decay of the substances in which it exists. The ancient Egyptians, whether from the peculiarity of their religious opinions, or from the desire so natural to the human heart to shun destruction, and gain perpetuity even for our dead bodies, prepared the corpses of their deceased friends in a particular way; and how perfectly this has preserved them, the occasional opening of a mummy permits us to see. The secret of this appears to be, independent of the careful exclusion of air, in the use of means to coagulate the albumen of the various fluids of the body. What the agent was which they employed to effect this, we now know very well; it was creosote, a principle which modern chemistry has isolated from its combinations."

"We must now inquire how far this method confers durability upon timber for practical purposes. We know the extremely long period which some timber will last; but we also know how liable much of it is to decay; and, as no one can be sure that any given piece of timber, which he intends to use, possesses the qualities requisite for durability, it seems desirable to have recourse to some means which will confer an equal degree of durability upon all the timber employed in the construction of an edifice. We are, I think, warranted in anticipating that such will be the result of Mr. Kyan's plan; which effects the solidification of the albumen, more particularly of the sap-wood; thus preventing it being liable to fermentation, or capable of being dissolved to furnish a pabulum to fungi.

"It likewise wards off the attacks of insects, with a very few exceptions, such as that of the teredo, an aggressor which no wood can resist, except an African wood, of the name of which I am uncertain, but which, if analyzed, might make us acquainted with some principle hostile to so formidable an enemy.

"It is impossible for bichloride of mercury to come in contact with albumen without undergoing decomposition, a protochloride of mercury being formed on the one side, and a solid substance on the other. Bichloride of mercury is thus the established test of the presence of albumen, and so delicate is it, that the addition of corrosive sublimate to any solution of albumen will indicate the two thousandth part, by causing a flaky appearance of the fluid.[*] On the opposite hand, albumen is the established antidote to poisoning by corrosive sublimate; and, though white of egg is generally preferred, milk, or flour diffused through water, or anything containing albumen, may be employed with success. 'Coagulated white of egg,' Says Mr. Brand, even under water, long resists putrefaction.' Horn is indurated albumen."

"A peculiarity of oak, owing to its chemical principles, is that less alteration on the solution of the corrosive sublimate may be expected to be produced by it than most other woods, for this reason, that gallic acid does not decompose bichloride of mercury; it is worthy of remark, however, that gallic acid solidifies albumen, and, therefore, in this wood, that process is effected by nature, which man is obliged to accomplish by artificial means for other trees, and hence one cause of the durability of the timber of the oak.[†]

"The solidification of the albumen and other principles, renders timber so prepared less hygrometric, and less disposed, when seasoned (a process which is much accelerated by this plan) to absorb atmospheric moisture."

In answer to the objections to Kyanising, that the quantity of mercury remaining in the wood would injuriously affect the health of the inhabitants of houses or ships, constructed with prepared timber, Dr. Dickson says,—

"The dread of this prevented Sir H. Davy and Professor Faraday urging the employment of corrosive sublimate as a means of preventing the ravages of the bookworm in Earl Spencer's library at Althorp. It is probable that these eminent chemists had in their minds the occurrence of violent, even fatal, salivation of the sailors on board H.M.S. Triumph, in 1810, from the rupture of bladders of quicksilver, and the escape of it about the ship. This event, brought before the Royal Society, and the public, by Sir Wm. Burnett, had probably impressed them with the dread which influenced them. But there can be no parallel between such a quantity of mercury, and the inconceivably small quantity which is sufficient to coagulate a large proportion of albumen. I cannot conceive how any injury can possibly result from it; while some circumstances incline me to think that it may render no small service in a way at present little thought of. The following extract from Mr. Wade's Treatise on the Dry-rot will aid in explaining what I allude to: — 'It was formerly the practice to let ships of war remain on the stocks *in frame* for two or four years, to season, as it was called; but there never was, says Sir J. Barrow (*Encyc. Brit.*), a more mistaken notion. When a ship,' Mr. Wade goes on to state, 'is built, exposed to the weather, the lower part forms a grand reservoir for all the rain that falls, and, as the timbers in that part are placed as close together as possible, the wet escapes very slowly. Those timbers are always soaked with moisture, and, to some distance from the keel, exhibit a green matter, which, when viewed through the microscope, is found to be a beautiful and completely formed moss, which vegetates at the expense of the timber.' This is the *green matter* of Priestly, well known to all those who investigate the rudimentary conditions of vegetable matter, and which will form, in any water which is stagnant, even in distilled water, without being in contact with wood, but still more rapidly if it be so. Now, it is a remarkable fact, that 'distilled water over quicksilver does not produce any

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"[*] M. Lassaigne calculates the composition of the albuminous precipitate to be 6·67 corrosive sublimate, and 93·33 albumen, or 1 atom of sublimate, and 10 atoms of albumen. — *See British Annals of Medicine*, vol. i. p. 562."

"[†] It must not be inferred from this statement that the application of the solution to oak is unnecessary, for the *outer layers*, or the *sap-wood of oak*, are as liable to decay as any other kind of timber; it is only the heart-wood which is rendered durable by natural means."

green matter.' 'It is very possible,' adds Carus, to whom I am indebted for a knowledge of this fact (see Taylor's Scientific Memoirs, vol. i. p. 233.), 'that the quicksilver, on account of its property of counteracting production, may destroy or prevent the infusorial fermentation, as it has been called.'

"The timbers near the basement of a house, if prepared by Kyan's process, will not, I think, generate that green matter, which is at once unsightly, and, by keeping up a perpetual dampness, injures the wood, and the health of those who dwell in the lower floor of a house.

"It is also worthy of mention, that the bilge-water appears to remain sweet in ships built of prepared wood.

"Holding the question of the preventive power of Kyan's plan to be settled in the affirmative, as far as the dry-rot, in the strictest sense of the term, is concerned, it may be proper to adduce some proof of its preservative effects against insects and fungi. Mr. Curtis, the distinguished author of the 'British Entomology,' has informed me, that since *palings of prepared wood* have been used in the Regent's Park, he can no longer find those insects which formerly abounded there. Farther, the Rev. Miles Berkeley, author of that part of 'Smith's English Flora' which treats of fungi, and who publishes Fasciculi of Dried Fungi, in illustration of that volume, having been annoyed by a fungus called Thelephora puteana springing up in a cupboard, which it rendered constantly damp, he applied a solution of corrosive sublimate to the woodwork; and so effectual did the application prove, that he cannot now procure a single specimen of that fungus, though it would be invaluable to him for the completion of his work.

"Having the evidence of so many different individuals in favour of this plan, none of whom have any pecuniary interest in its being adopted, we must either question their competency to judge of its merits, or admit its validity; since we may well ask —

——'Or how, or why,
Should all conspire to cheat us with a lie?'"

We have given these ample extracts from Dr. Dickson's *Lecture* by the doctor's permission; and we have only to add, that an appendix of twenty pages contains a number of documents from different well-known practical men, all in favour of Kyanising. In our opinion, there cannot be a doubt of its efficacy to a certain extent; but how far that extent goes, the experience of future years must determine. One thing we must caution our readers against; which is the practice of Kyanising logs or planks before cutting them up, and supposing that they have obtained all the benefits of the process. With equal propriety might they paint a log, and then after sawing it up for use, consider the articles formed of it as painted. Such a mode of Kyanising or painting is obviously merely throwing money away; we know wood is frequently Kyanised in this manner by persons in the neighbourhood of London; and when, in a few years, the articles formed of wood so treated begin to rot, this will be attributed to the inefficacy of the process. Before any piece of wood is Kyanised, it ought not only to be cut up into the form required, but even to be planed, when that process is considered necessary, before being sent to the Kyanising tank. It is a great mistake, in our opinion, to suppose that the Kyanising process penetrates further than a few lines below the surface even of the softest wood. The very circumstance of the corrosive sublimate forming a hardened insoluble compound or surface casing to the wood, a few hours after its immersion, is sufficient to prevent the fluid from penetrating to any great depth; and we can easily conceive a log of soft wood Kyanised, and rendered hard and durable on the outside, while, in the interior, the process of decay was going on. This happens every day with green wood, which has been coated over with paint before it was thoroughly seasoned. In our opinion enough has not been said in Mr. Dickson's pamphlet, or in Dr. Birkbeck's lecture (see Vol. II., p. 236.), on this part of the subject. It is for the permanent interest of the Kyanising Company, to make it clearly and distinctly known to the public, that the wood to be Kyanised ought to be worked, and reduced to the form in which it is finally to remain, before it is put into their tanks. If this be not done, the process of Kyanising may, and probably will, fall into disrepute in the course of a very few years.

ART. III. *The Churches of London: a History and Description of the Ecclesiastical Edifices of the Metropolis.* By G. Godwin, Jun., Associate of the Institute of British Architects; assisted by J. Britton, F.S.A., &c. Nos. 7, 8, 9, and 10.

WE noticed in p. 341., with due commendation, this excellent and very cheap work. No. VII. contains two copper-plates and two wood-engravings of the Temple Church, with the concluding part of the letter-press belonging to that church. No. VIII. contains two copper-plate views and one woodcut, of All Hallows Church, Barking, with the letter-press describing that curious monument of antiquity. No. IX. contains two copper-plate engravings and one woodcut of St. Andrew's Undershaft, with the descriptive letter-press; and No. X. contains two copper-plate engravings and one woodcut of St. Bartholomew's, Threadneedle Street, and one woodcut of All Hallows, Bread Street, with the accompanying letter-press. On the wrapper of No. IX. is the following notice:—

> "In reply to the enquiries of some correspondents, the author of the present work assures them, that he intends to give accounts and illustrations of *all* the churches which are strictly within the limits of the city of London: i. e. from Temple Bar, west, to Bishopsgate and Aldgate, eastward, and from Goswell Street, north, to the river Thames, south; and he calculates that the whole will not exceed thirty-six numbers. He hopes to bring them into thirty numbers, by uniting the accounts of two or three churches of minor interest. On no subsequent occasion will one subject extend through two numbers."

And on the wrapper of No. X. the following:—

> "The descriptions of St. Paul's Cathedral and the Temple Church may be had separately (each containing four plates), price 2*s*. 6*d*. in boards."

Art. IV. *Ornaments in every Style of Design practically applicable to the Decoration of the Interior of domestic and public Buildings; and intended for the Assistance of the Architect, Builder, Upholsterer, and Decorator; manufactured in Papier Mâché.* By C. F. Bielefield. 4to. 1836.

The first plate is a perspective view of the interior of the Grocers' Hall, the enrichments of which were executed in *papier mâché* by Mr. Bielefield. Twelve plates follow of details, which have been modelled for different buildings, and which will be found useful, not only to the architect who employs the *papier mâché* in decoration, but to young men who wish to store their minds with ideas for architectural ornaments in the classical style. The introduction of *papier mâché* ornaments in interior decoration is one of the greatest building improvements in modern times; because it affords the use of ornaments, at a moderate cost, which in plaster would have been enormously expensive.

Art. V. *Library Catalogue, and Regulations of the Telford Premiums, of the Institution of Civil Engineers.* Pamph., 8vo, 57 pages.

The principal part of this tract is occupied with a catalogue of the books, drawings, and manuscripts, which form the library of the Institution, and the next contains the regulations of the Telford premiums. These we quote, for the sake of young engineers who may not have an opportunity of seeing the pamphlet, and who may yet be ambitious of competing for some of the Telfordian medals: —

"The Council of the Institution of Civil Engineers, considering it desirable that the interest of the Telford Bequest should be distributed annually in premiums, provided objects sufficiently deserving of this mark of distinction present themselves, have directed the following resolutions respecting these premiums to be printed: —

"1st. The premiums shall be honorary, or honorary and pecuniary, or pecuniary simply.

"2d. The honorary premiums to consist of a Telford medal struck in gold, silver, or bronze.

"3d. The honorary and pecuniary premiums to consist of a Telford medal and such sum of money as the circumstances of the case may seem to require.

"4th. That all communications made to the Institution will be considered as subjects for the premiums, no distinction being made in awarding the premiums, between the communications of Members, Associates, or others in no way connected with the Institution, whether natives or foreigners.

"5th. The Council will not allow exertions in aid of the Institution to go unrewarded; they consider that those who forward the great objects which the Institution has in view as entitled to the marks of distinction which these premiums will confer.

"The following are the premiums which have already been awarded: — To

Mr. Timperly, for his Account and Drawings of the Docks at Hull, a gold medal.* To Mr. Albano, for his Account of the Stone Bridge over the Dora at Turin, a silver medal. To Mr. Barlow, jun., for his Theoretical Investigation on the Form of Lock Gates, a silver medal. To Mr. Gravatt, for his Improvement on the Spirit Level, a silver medal."

"With the view of pointing out the subjects which are considered as peculiarly fitted for communications, the Council have directed the following extracts from the Address of the President to be appended: —

"'You would be pleased to see, by the Secretary's Circular, that the attendances of last year, the discussions, the communications, the presents received, and the state of our funds, justified the account which was given of the flourishing state of the Institution.

"'Since the recess, the first volume of Transactions has been published — the copies are in your possession. Thus we are now launched into the public, not of England only, but of at least three quarters of the globe; for our volume is now on the way to America and India, as well as to almost all parts of Europe. As Members of the Institution, as well as individuals interested in the character which the profession of a British Civil Engineer bears, we must not spare any pains to support that character in the public opinion. The Institution existed many years before the first volume of Transactions was published; but that is no reason why so many years, or more than one year, should pass before the publication of another volume, or, at least, part of a volume. The stage of infancy and childhood must be considered as past — by publishing, we have announced our Institution as arrived in some measure at maturity; and we must not allow the least appearance of decay or premature old age. We have the means: — the *will* to collect and to communicate is the only thing wanted. The materials are abundant — they are in the hands of almost every resident, who has the charge of a public work or public survey, whether river, canal, railroad, or public building, or who has the opportunity of seeing their working after they are finished. And if gentlemen in such situations, particularly young residents, would impress themselves with the feeling that they ought to communicate their observations, the benefit would be reflective by leading to the habit of recording observations — a practice most useful for the obtaining of knowledge.†

"'A person qualified to be a Member or an Associate of this Institution cannot possibly visit a public work, or examine the survey of a river, canal, or railway, without seeing abundant materials in the hands of the resident Engineer or Surveyor, for useful practical communications. When urging this, I have frequently been met with the reply that the individual did not suppose such papers would be acceptable. Here is a great mistake. Every new fact, however *isolated*, is of great value to the Institution, one of the important objects of which is to collect and record facts. And it cannot be too generally known that these will be considered as furnishing most valuable materials for the Transactions. I hope that the volume just published will serve to rectify this mistake, for, on referring to it, it will be found principally to consist of such practical papers; the Council considering these as more desirable for publication than theoretic inquiries, or analytic calculations, though not to the exclusion of the latter. Observations of facts may be considered as experiments on a large scale; they ought, therefore, to be more correct than the latter, and will be so if only carefully made. To make experiments on a large scale is

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"* The manuscript of this communication is a most beautiful model for imitation,

"† The importance of keeping a daily, nay, in some cases, even an hourly journal, cannot be too strongly impressed on the mind of every Engineer; the amount of information which has been lost from the neglect of this practice is incalculable.

often difficult, and so expensive that it can rarely be undertaken, solely for the sake of the experiments: but when the observations are made in the course of the profession, they are the cheapest in the making, and, moreover, the most valuable when obtained. Some, indeed, cannot be depended on, unless made at full size, particularly hydraulic experiments. where, to use the expression one of our Honorary Members, 'we ought to have a model of the water,' to be correct in experimenting upon it with models: and there is the same objection to all experiments with models, wherever friction is concerned. How valuable, therefore, are observations made in the most simple case, as a foundation for theory! To note the velocities and resistance at different speeds of a boat in a canal, with a section and description of the canal and boat; to register the velocities of a river in different states, with the fall or slope of the surface, and the section in each case, noting also the differences of the velocity between different parts of the same section; to observe the actual discharge of sluices under different circumstances, and the work actually done by water; to record the construction, &c., of sea-walls and river and canal banks, and where a failure takes place to enquire into the cause of it — is the duty of the person who has the charge of the survey or work, and I hope he will consider it his interest, as well as his duty, to communicate these observations to the Institution.

"'The remark has been made, that our first volume contains little or nothing on railways; — this is true; they have formed the subject of many conversations, but we have very few papers upon them. Yet what opportunities have gentlemen had of enriching the Transactions by papers on this comparatively new subject! But it is needless to indulge in these reflections, the harvest is yet to reap: and I hope that during the present session we shall have many communications on this important matter to store our next volume: — a report on the construction of the foundation of railroads, particularly in cases of difficulty, or the form, weight, &c., of the parts; and still more, if possible, on the performance of locomotive engines at different speeds and upon different inclinations, the limit of adhesion, the effect of curves, the wear of the parts: — these are but a few of the many points on which information is very desirable. The experiments, probably, have been made, and the results noted, but they remain in the Engineer's pocket-book; not that he makes any secret of them, but because he has other engagements, and does not suppose they are worthy of his trouble in giving, or ours in receiving. This is, as I have said, a great mistake, and forms almost a national reproach. A French gentleman, Chevalier de Pambour, during his stay in this country, made, through the known liberality of the Directors of the Liverpool and Manchester Railway in such matters, a series of experiments, and has *alone* done more in classing and communicating the results in his excellent publication, than all that had been done before.

"'Let it be remembered, also, that we have medals and premiums to adjudge, and that the Council will not allow exertions for the good of the Institution to pass unnoticed.

"'I have thought it my duty to say thus much on an important subject, and I hope the Members, and more particularly the Associates who are present, will respond to what I have said by their early contributions.'"

ART. VI. *Report by a Committee of the Society of Arts in Scotland, on the best Alphabet and Method of Printing for the Use of the Blind.* 34 pages, with a large folding Plate. 1837.

THE subject of this pamphlet is very interesting in itself, and does great honour to the humanity of the active members of the Society of Useful Arts, in Scotland. It is a gratifying proof of the advanced state of civilisation, to see the sympathies of the many called forth by the privations of the few; and much might be said upon the subject, were it not foreign to the purpose of this work.

ART. VII. *Literary Notice.*

LA Villa Pia des Jardins du Vatican, Architecture de Pirro Ligorio, publiée dans tous ses Details par J. Bouchet, Architecte ; xxiv. *Planches gravées au Trait sur Acier par Hibou ; avec une Notice Historique sur l'Auteur de ce Monument, et avec un Texte descriptif, par Raoul Rochette, Antiquaire.* — The work will be published at 32 francs to subscribers, and 35 francs to non-subscribers. It may be obtained through any London bookseller who has a correspondent in Paris. The Villa Pia is universally allowed to be the most complete of its kind in Rome; and this work will, in consequence, be hailed with satisfaction by all architects who have enjoyed the advantage of seeing it.

MISCELLANEOUS INTELLIGENCE.

ART. I. *General Notices.*

MAGNITUDE, when joined with irregularity, and that apparent irregularity is reducible, after a slight inspection, to symmetry, is doubtless a higher kind of beauty, than symmetry obvious at first sight; but that irregularity which is not reducible to symmetry is a kind of beauty in architecture which may surprise at first, and to which the mind may be reconciled by the history of the building, but it is one which can never be attended with satisfaction in the case of a building newly erected; unless it were an avowed imitation of some other building or class of buildings already existing. Irregular buildings, then, that cannot be reduced to some principle of symmetry, order, or imitation, cannot be considered as being possessed of architectural beauty. — *W.*

The Dry Rot. — Our correspondent, Dr. Mease of Philadelphia, in a paper read before the Royal Society, recommends the following method for preventing the occurrence of the dry rot in ships: it is, to impregnate the timbers and planks with common salt, as practised by the ship-builders of Philadelphia. For this purpose, all the spaces between the timbers and the outside and inside planks, are to be filled with Spanish or Portuguese salt, driven down as the filling proceeds. The salt is found to penetrate thoroughly, and completely to saturate the wood, combining with its native sap, and preventing fermentation, and the consequent evolution of foul air. The principal inconvenience attending this method is, the dampness it produces in the ship; an evil for which the author suggests various remedies.—*Cond.*

Forms of Heating Apparatus. — In reference to the forms of heating apparatus, I conceive them to be very immaterial, if the condition be fulfilled of providing a surface sufficiently developed to impart the required temperature to the air, without itself ever being hot enough to act on the dust which is floating in the air: that is, that the surface of the apparatus shall never much exceed 100° of Fahr., and if under it so much the better. It is quite evident that if heat is to be supplied to one side of a plate or tube, and to be extracted from the other side of it by a rapid current of air passing over it, it matters nothing whether this heat be supplied by the direct action of fuel, or by vapour of water, or other means, provided it be never allowed to pass a certain limit. If the plate or tube be heated to 212°, no difference of effect can be produced on the outer surface, by this heat being imparted in one case by steam, and in the other by hot air, or by flame; and the only reason for preferring steam in certain cases is, the impossibility of overheating the surface by mismanagement, when it is the medium employed in heating the pipes or plates. — *C. London, June*, 1837.

Cemeteries.—It was not until the eighth century that cemeteries were allowed to be adjacent to churches; and it was only by slow steps that interments encroached within the sacred walls themselves: it was only then permitted to persons of rank and eminence, who often built an attached sepulchral chapel; and the present unrestrained access has prevailed only in recent times. It is a practice which, as being at once unbecoming to the sacred edifice, occasionally injurious to the structure, and always deleterious to the congregation, ought to be abolished. Cemeteries in pleasing and suitable situations, on the outskirts of all large towns, are far better. How long will burying grounds be allowed by law in London? Let me refer our legislators to one beneath their very noses, from the precincts of which it was proposed to draw their supply of pure air, in the experiments now going on in the venerable hall of St. Edward! Let them think upon the indecency of an immense population constantly spurning beneath their feet the remains of what was once lovely, venerable, and honoured. The horrible scenes which are there enacted every morning at an early hour are only to be paralleled in a metropolitan cemetery, to say nothing of the effluvium which usually follows the "*probe*"; yet custom makes us quiet in this metropolis, under these and other horrors which humanity shudders at. So long ago as 1814, the commissioners for the improvement of Westminster reported to parliament that St. Margaret's churchyard could not, consistently with the health of the neighbourhood, be used much longer as a burial-ground. (*Bardwell's Temples*, &c., p. 155.)

ART. II. *Foreign Notices.*

FRANCE.

Report on the public Buildings in Paris for 1836. During 1836, fifteen monuments and public buildings have been completed at the expense of the administration, and five at that of private individuals.

Monuments and public Buildings belonging to the State finished in 1836. On the right bank of the Seine. The triumphal Arc de l'E'toile (commenced in 1806, by order of the Emperor Napoleon, who wished to raise an imperishable monument in honour of the French armies) has been completed, in 1835, thirty years after its commencement, at an expense of ten millions of francs. The building on the Quai de Billy, destined to serve as a depôt for the provisions required in war. The church of La Madeleine, which was commenced in 1806, and intended to contain the trophies of the grand army, and which has cost thirteen millions of francs. The Obelisk of Luxor, raised at an expense of 560,000 francs. The church of Notre Dame de Lorette. The church of Saint Dénis of the Holy Sacrament, Rue Saint Louis, in the Marais, which was destroyed during the revolution, and was begun to be restored in 1805, is now completed, having cost less than six millions of francs. The two large prisons in the Rue de la Roquette; the Quai de la Ferraile; 16,000 yards of sewerage in different parts of the town; 300 boundary fountains put up; 50 streets paved, according to the new system of having them highest in the centre, and sloping towards each side, and many of them with two causeways; 500 gas lights, erected for lighting the bridges, quays, squares, markets, and streets; numerous trees planted along the quays, from the Pont Royal to the Bridge of Austerlitz, and in several of the public squares; and the large building for the office of the Minister of Marine.—On the left bank of the Seine. The edifice in the Rue Saint-Eloi, for the reception of the archives of the Court of Accounts; the Hôtel Dieu, rebuilt according to the new line of road; the infirmary of the E'cole Polytechnique; the establishment for the deaf and dumb; the poultry market of La Valleé; the elementary schools in the Rue du Pont de Lodi; catacombs and a chapel dedicated to the Holy Virgin aux Invalides; 5,400 yards of sewerage; 20

streets paved according to the new system; 100 boundary fountains, and 200 gas lamps put up; various plantations formed; a bridge thrown over the Bièvre, at the passage of the exterior Boulevards; the demolition of the Porche Belle-Chasse, and the reconstruction of the barracks; a pavilion in the Rue de l'Université, to serve as a depot for the marine charts; the new Rue Racine; and the Musée Dupuytren.

Monuments and public Edifices nearly finished at the end of 1836. The additions to the Museum d'Histoire Naturelle, consisting of a gallery of geology and mineralogy, a range of hot-houses, and reservoirs for water, buildings for monkeys, which cost upwards of five millions of francs. The restoration of the ancient buildings of the Collège de France; the new buildings on the Place de Cambray, which were begun in 1828, and have now been completed for less than one million of francs. The Panthéon, commenced by Louis XV. for the service of the canons of Saint-Génévièe, and afterwards used as a place of sepulture for great men, has been now finished, at an expense of upwards of four millions of francs. The Artesian Well, in the court of the abbattoir at the Barrière de Grenelle, bored to the depth of 1200 ft. The Hôtel de l'Archevêche, Rue de Varenne; the embellishment of the Boulevards des Italiens and Montmartre; and the cleaning and improvement of the Faubourg Saint Honoré.

Public Edifices belonging to private Individuals finished in 1836. The magnificent Passages des Panoramas; the markets of La Madeleine, and the Foire Saint-Laurent; the theatre Saint-Antoine; and the Musard concert-room, Rue Neuve Vivienne. Besides these, the Quays of L'E'cole, La Grève, and St. Paul, are far advanced; the piles for the suspended passage between the Quai des Célestins, the Isle Louviers, the Isle St. Louis, and the Quai St. Bernard, are nearly all driven in; the foundations of the fountain in the Place de l'Ancien Opera, Rue de Richelieu, have been laid, but the basin and group have not yet been constructed. All the parts of the bronze Monument de Juillet (in memory of those who fell during the three days of July, 1830), are cast, and only require to be put together: this monument will cost 900,000 francs. The church of Saint-Vincent de Paul, in the Place Lafayette, is completed, as far as regards the walls; but the roof and sculptural ornaments are yet to be constructed. The embellishments of the Place de la Concorde are about to be commenced; and the railroad from Paris to St. Germain has been commenced. A great number of sewers to the street have been formed; the buildings of the administration of the Hôtel Dieu are in a forward state; the foundations of the Chamber of Peers at the Luxembourg are laid; the grand reservoirs for water in the Rue de Racine are far advanced; the chapel of the seminary of Saint-Sulpice is built as high as the cornice; the E'cole Royale des Beaux Arts is to be finished in 1837, for about three and a half millions of francs; the Hôtel du Quai d'Orçay, commenced in 1810, and destined for the office of the Minister of the Interior, is also to be finished in 1837, and is to cost less than ten millions of francs. The enclosing of the depot of marbles is advancing rapidly, as well as the façade of the E'cole Polytechnique, in the Rue Descartes. The works in the harbours of Saint-Bernard and Miramiones, which were but little advanced, have been interrupted from the irruption of water.

Private Buildings. It is estimated that more than 200 houses were completely finished in the year 1836, and more than 500 others are now building in the suburbs. A number of buildings have also been erected near the Barrières, particularly at Batignolles, consisting of manufactories, workshops, warehouses, &c. (*L'E'cho du Monde Savant.*)

Artesian Wells.—The Artesian well at Grenelle has been bored to the depth of 1260 ft., and it is expected that 1500 ft. will ultimately be reached. (*L'E'cho du Monde Savant*, Aug. 23. 1837.)

A temporary Bridge of Ropes, during the fair at Troyes, imitating the principle of the iron suspension bridges, was thrown across the Seine, for the accommodation of foot passengers. It was the work of a carpenter of that town, and is likely to be adopted in other parts of that district where the river is not very wide. (*Newsp.*, Sept. 12. 1837.)

EGYPT.

The Bridge of the Nile. — The gigantic bridge of the Nile, which has been so long projected, is now on the point of being commenced, and it is expected to be finished in the space of six years. This remarkable structure will be built at the point of the Delta, five leagues below Cairo. As during winter, and a part of spring, the waters will be too low to serve the purposes of agriculture, the bridge will be made in such a manner as to serve for sluices to raise the water to the necessary height. The cultivator will thus be saved a great deal of trouble and pains, and will only have to direct the water into the canals for the purposes of irrigation. It is calculated that 24,000 workmen will be employed in levelling the bed of the river, raising the banks, and cutting the canals for irrigation; besides 340 smiths and 650 carpenters from the arsenal at Alexandria. So great a number of labourers will not easily be found in Egypt; but four or five regiments will be employed on the works. The stones required will be transported by means of a railway, extending to the mountains of Mokatam, two leagues from the Nile. (*L'Echo du Monde Savant*, Aug. 12. 1837.)

NORTH AMERICA.

State of public Architecture in the United States. — A rather illiberal remark was made on the Americans in the last number of the *London Quarterly Review*, in first assuming that their architecture in general was mean and spiritless, and then concluding that they are generally an irreligious people, in consequence of the style of their church architecture. It certainly does not follow that those nations that build splendid temples of worship in the Grecian or Gothic architecture are, therefore, decidedly religious. Nor is the *ipse dixit* of the reviewer true, either in fact or conclusion. In the United States there are many splendid temples for religious worship, not on a scale of magnificence to equal the St. Peter's of Rome, or the St. Paul's of London, nor the ancient abbeys or minsters of this country, yet, generally speaking, on a par with many or most of the modern religious edifices throughout the United Kingdom. And, were it not so, the conclusion of the reviewer is a perfect non sequitur, proving nothing but his own hostility to the institutions and government of the country that he seeks to condemn or censure, at the same time displaying palpably his own ignorance. There are numerous superior specimens of architecture in the United States, which, although neither antique nor original, are surely highly creditable to the genius and generosity of the American people. Many instances might be enumerated in Boston, New York, Philadelphia, Baltimore, Washington, and other cities, of different public buildings; and, assuredly, the United States' Banking House at Philadelphia, built on the model of the ancient Parthenon, excels in elegance, and equals in utility, the edifice, not only of the Bank of England, but that of any banking house in the world. Yet this subject is noticed now, merely to allude to two edifices, in one of the new cities in the American union, where splendid architecture was least expected; these are a hotel and theatre in New Orleans. The Exchange Hotel of New Orleans, in St. Charles Street, is probably the largest of its kind in the world now extant. It has been erected by a company of merchants, chartered with banking privileges, and a capital of 2,500,000 dollars. The cost of the ground and building has amounted to upwards of 600,000 dollars, or about 150,000*l* sterling; and the cost of the furniture alone, extra considered, is about 30,000*l*. The hotel is 228 ft. in front, by 196 ft. throughout, or square; the front view is elevated on a plain basement 14 ft. high, in the centre of which is a portico containing 6 columns projecting from the main building, with 4 also on either side receding inward, all in the Corinthian order, and forming an elegant colonnade along two thirds of the front, the other third being solid, and ornamented with pilasters of the same architecture. It is 6 stories high. From the basement to the top of the cornice the height is 71 ft.; but there is an octagon in the centre of the building 70 ft. in diameter, which is raised 53 ft. above the roof, and surmounted by a dome of 23 ft. high, and 46 ft. in diameter. Above this dome is a tower or observatory 35 ft. high; the whole height being 113 ft. from the ground. The basement story contains 14 shops, besides a large bathing establishment containing 14 compartments, elegantly furnished and adorned. The other part of the hotel contains 350 rooms, 14 of which are parlours with bed-rooms attached, adapted for private families. The gentlemen's dining-room is 130 ft. by 50 ft., and 22 ft. high, having two rows of Corinthian columns running longitudinally on either side, with three splendid lustres dependent from the centre of the roof. This room can comfortably accommodate upwards of 350 gentlemen at once. The ladies' dining-room is 60 ft. by 30 ft., at one angle of the hotel; opposite to which, on the same side, is the ladies' drawingroom, of the same size, and splendidly furnished. The basement part of the octagon is devoted to a restauratant and a beer room, for the refreshment of citizens generally. Over that is a grand saloon, with periodicals and various accommodations for boarders. This grand saloon is entered by two flights of stone steps, on either side, ascending to the colonnade rearward, in the centre of which is erected a beautiful statue of General Washington, sculptured from the finest Carrara marble, the donation of John Hagan, a private merchant of New Orleans. The statue is 12 ft. high, exclusive of the pedestal. The theatre of New Orleans is on a similar scale of magnificence and magnitude, but it has been the work of one enterprising individual, James Caldwell. To form an idea of its size we may compare it with the other principal theatres of Europe. The number of tiers of boxes including galleries is, in the Milan opera, 7; Paris opera, 5; Covent Garden, 5; Drury Lane, 5; New Orleans, 5; Naples, 7; St. Petersburg, 8. The number of boudoirs attached to boxes is, in Milan opera, 180 rooms; Paris opera, none; Covent Garden, none; Drury Lane, none; New Orleans, 47; Naples, 190; St. Petersburg, 200.

The size of the grand saloon is, in Milan opera, 100 ft. by 24 ft.; Paris opera, 96 ft. long; Covent Garden, 56 ft. by 19 ft.; Drury Lane, 90 ft. by 26 ft.; New Orleans, 129 ft. by 26 ft.; Naples, 82 ft. by 20 ft: St. Petersburg, 125 ft. by 30 ft." (*Morning Chronicle*, July 11. 1837.)

ART. III. *Domestic Notices.*

ENGLAND.

THE New Houses of Parliament. — Though these may be said to be actually commenced, a contract having been entered into with Messrs. Lee for embanking the river, and founding and carrying up certain walls on that side of the intended buildings; yet there is so much sound sense in the following letter by Mr. Savage, that we think it well deserving of record in the *Architectural Magazine*. Besides, there is yet a possibility of a new site being chosen; and, if this be not the case, we have no doubt that in a very few years the present one will be discovered to be as unwholesome as the site of the New Palace. We greatly admire Mr. Barry, both as an architect and a man, but we cannot reconcile ourselves either to the present site, or to the Gothic style of architecture, for modern houses of legislature. Mr. Savage's letter is addressed to the editor of the *Morning Herald*.

"Mr. Editor, You having again called the public attention to the designs for the new parliamentary houses, permit me to suggest a few remarks on the very important subject of their proper ventilation. The importance of this essential object has been so generally felt and asserted that, perhaps, it may be thought superfluous to urge it further. But we often see that a subject, being taken for granted, is as much forgotten and neglected as if its truth and value were still disputable; and the best hope of obtaining an object is, when those who can command it have a clear view of the reasons of its importance, and also of the best means of effecting it. Without further preface or apology I therefore proceed to submit a few observations which I conceive may be useful. The intimate connection and sympathy of action between the different parts of the human frame are well known, and among other examples is the balance which constantly obtains between respiration and digestion; and so important has digestion been found to the health of man, that by many it has been considered the one thing needful. Now, free and easy respiration (the most powerful means of inducing a healthy digestion) depends on the purity of the air inhaled; and, perhaps, the principal cause of the superior health enjoyed by the ploughman above that of the careworn statesman, or the clerk at the desk in a merchant's counting house, may be principally traced to the difference of the air which they breathe; the one pure and cool, the other heated and charged with noxious gases. I was much pleased with Dr. Reid's evidence before the parliamentary committee of last year, and had great expectation of his success; because it appeared to me that he had adopted the same view of the subject as the late ingenious Mr. Tredgold, whose *Treatise on Warming and Ventilating*, like all his works, exhibits the most careful research and profound reasoning, and a constant attention to practical utility. But Mr. Tredgold's principles have been neglected in some material points. I was less sanguine of Dr. Reid's success with regard to his plans for facilitating the hearing and speaking in the houses, because some of the facts he stated were contradicted by my own experience, and some of his provisions appeared to me calculated to interfere injuriously with the means proposed for ventilating. The experiment is stated to be, to a considerable extent, a failure. Nevertheless, from the paramount importance of the subject, I do not think any well-wisher to his country will regret the expense of that experiment.

Without a good theory, we can never have a sure and safe practice; and as practice and experience are the proper tests of theory, we cannot expect to arrive at a correct theory but by experiments more or less expensive. In hopes of promoting the end in view, I submit the following points to the consideration of those who may have the power to prosecute the question to a satisfactory conclusion.

It is agreed that hearing and speaking are facilitated by the density and coolness of the atmosphere, and that the greatest degree of cold in the air is not found to be unpleasant for breathing, when it is without motion. The coldest air of the polar regions was not found unpleasant when free from current, but as soon as any wind arose it became intolerable. It is also agreed that sounds are heard most clearly and distinctly, and to the greatest distance, at night, when the air is still, and the multitudinous noises of the day have ceased. Circumscribing walls are therefore of no use to assist in speaking or hearing, except to keep out extraneous noises: and Dr. Reid condemns the attempt to use the floor or upright sides as reverberators, but recommends that the ceiling be used for that purpose; and that the ceiling be therefore brought down so low as to act as a reflector, too rapid in its reflection to occasion echo. The suggestion was plausible, but the experiment has failed: and I rejoice to find that in this failure we have another evidence of the general harmony of the principles of nature; viz., that what is most useful is also most beautiful. In a lofty room we have at once a greater beauty, and a greater capacity for pure air. The necessary change of air, by allowing the impure exhalations to escape at the upper part as they rise, and the supplying the deficiency by pure fresh air from below, can be effected with much less rapidity of current in a lofty room, than in a low one. In fact, the upper part of the chamber may be considered as a reservoir of the impurities which are generated in the air of the chamber; and they may remain in the upper part of a lofty room for a considerable portion of time, without injury to those who are near the floor. Another important point to which I wish to direct attention is, the necessity of separating the means for warming from those for ventilating; that is, separate means for each. Thus each may be made quite manageable, but when attempted by the same machinery I have never known them to succeed. The objects to be aimed at should be pure and cool air to breathe, and radiant heat to warm the person. The evils to be avoided are currents and draughts, whether *hot* or *cold*, and overheated air for respiration. These *desiderata* may be easily effected by proper means separately supplied in sufficient power and magnitude. The failure of the present temporary houses, I think, is to be attributed to the lowering of the ceiling, and to the attempt to warm the house and the members by the air supplied for respiration. Tredgold strongly insists upon the superiority of *cool* air for respiration, and radiant heat for warming the person. As connected with the subject of the purity of the air, and the healthy occupation of the houses, allow me to call attention once more to the site.

The first requisite of a building designed to be habitable is, that it should stand high and dry. In the present case it is of far greater importance than in that of a mere private residence. Upon an average, 2000 persons will be constantly engaged within the walls of parliament during the session, and most actively engaged, precisely at that season of the year which, under the most favourable circumstances, is unfriendly to health. It has been often observed, that the greatest enemy to the human frame is damp. On this account it is of very great consequence to obtain for every habitation a site sufficiently elevated to allow of a good drainage, and as far removed as possible from any source of continuous and extensive evaporation. But what is it now proposed to take for the site of the new buildings? The very lowest level to be found in the metropolis. The present houses are much nearer the water than would be deemed prudent for a nobleman's seat; but, in the new design, in order to gain room for the accommodation required, they are placed partly on an artificial embankment, to be formed on what is the present bed of the river. This embankment, or terrace, will allow in summer of a very pleasant promenade; but in the winter months, when the houses meet, it is not likely to be a favourite resort of members. Exposed to the unbroken violence of the east winds, or enveloped in fogs, the terrace, and all the rooms looking upon it, will be far from agreeable; and the speaker's house (he being of necessity a resident) has no garden or outlet at all wherein he or his family may exercise. The tide is actually to wash the walls of his castle, and on its recession he will be regaled with the effluvia of the mud and bilge water.

The mortality among the members of the House of Commons is already greater than among any similar number of men belonging to the same rank in life, and the anxieties, fatigues, and late hours, to which they are exposed, render it much more important than it would be in any other case, that they should be shielded from all noxious influences, which it may be possible to avoid. A second requisite is, that the buildings should be of convenient and easy access, for which purpose they should be centrally situated in respect of the metropolis. A more inconvenient site, however, than the present could not well be selected; it is a complete *cul de sac.* The existing buildings are nearly two miles distant from the residence of the great majority of the members. On the other hand, it must be admitted, that the business of a deliberative assembly should not be conducted in the midst of the noise and bustle of a great public thoroughfare, or in a densely peopled neighbourhood, where a riotous mob might be collected at a moment's notice. The first step should be to abandon the idea of erecting the new houses upon their present site, and to select another better adapted to the object. The best site yet named is that of the Green Park. This locality is sufficiently central, the majority of the members living north of Pall Mall, and west of Regent Street; sufficiently elevated, being 30 ft. above the level of the Thames at high water; removed from the noise of the streets, and an open spot on which buildings intended to be an ornament to the metropolis might be seen to the greatest advantage. The buildings may be entirely insulated and accessible from all directions.

Against moving the site, two objections have been urged: first, the association of ideas connecting past statesmen with St. Stephen's Chapel;

and, secondly, the contiguity of the Law Courts. A word in reply to each of these. The destruction of the houses by fire, and the complete change of the plan in rebuilding, must totally destroy all association in idea of the new houses with the illustrious statesmen whose eloquence has shed unfading lustre upon our parliamentary annals, unless it be that *moral* association, which may as easily travel across the Park, as to a building of a totally different form, distant only 100 yards.

As to the supposed convenience in the contiguity of the Law Courts, it should be recollected that the courts sit at Westminster only a part of the time of the sitting of parliament; at all events the health and convenience of those members, who attend the most sedulously to their parliamentary duties should far outweigh these hypothetical and partial inconveniences. — *James Savage.* 31. *Essex Street, Strand, March* 7. 1837. (*Morning Herald*, March 15. 1837.)

A Suburban Villa Company is projected, the object of which is, to select situations and build houses, and lay out gardens, on the most approved principles of taste, comfort, and economy. The capital intended to be raised will be such as to enable the company to make all their purchases in ready money, by which means alone, they will have considerable advantages over most builders; but the advantages to the company will be but trifling, compared with the benefits which the public will derive in getting, through their means, more elegant, durable, and healthy houses. — *Cond.*

ISLE OF ANGLESEA. — *Holyhead Harbour.* According to the last official report of the commissioners for the improvement of the road from London to Holyhead, the following important works are now in progress at the important station of Holyhead; the fixing of the cast-iron posts that have been provided for supporting the protecting chains on the north side of the harbour; the improvements of the road between the north pier and the swivel bridge, which would have been completed some months ago, had it not been reserved as an employment for the men who are working with the diving-bell, when stormy weather occurs; lime is burning for pointing the face of the north pier: timber is provided for two mooring buoys; the carpenters are proceeding with the repair of the workmen's cottages on the Salt Island; the diving-bell is engaged in cutting down rock within the packet berths, and as soon as that important work is finished, it will be employed in cutting away other detached portions of rock which have been ordered to be lowered. It may be interesting to add, that the number of vessels that entered this harbour during the year 1836, exclusive of king's ships, pleasure yachts, and the steam packets and coal vessels employed by the post-office, was 833; the registered tonnage was 12,296. (*Shrewsbury Chron.*)

ESSEX. — *Two Protestant Episcopal Chapels* are proposed to be erected and endowed in the parish of Hatfield Broad Oak, Essex, each capable of holding from 260 to 300, with accommodation for schools, but no gallery. The one which will be situated on Hatfield Heath is to be designated the *Holy Cross;* the other, on the Forest, near to the school house at Bush End, to be known as the *Holy Trinity*: and it is the wish of the party into whose hands the designs will be submitted, that the form of each plan be made to answer to its respective designation. — *Frederick Lush. London, September* 28. 1837.

OXFORDSHIRE. — *The Conservatory at Ditchley* (*fig.* 120.) is now completed. In the ground plan (*fig.* 121.), *a* is the state apartment; *b*, the dressing-room; *c*, proposed conservatory; *d*, the terrace; *f*, the garden; *g*, the park. The conservatory connects the main body of the mansion with the western wing. It faces a flower-garden that was formed by the present dowager Lady Dillon, but, most unfortunately, it has a north-west aspect. It is true that, at the present season (July), the sun shines on it as early as 8 or 9 in the morning: but, in winter, I fear that will not be the case before mid-day. It is amply provided with the means of ventilation, for the wooden front lights are made to slide down into the basement wall, and the iron top lights are made partly

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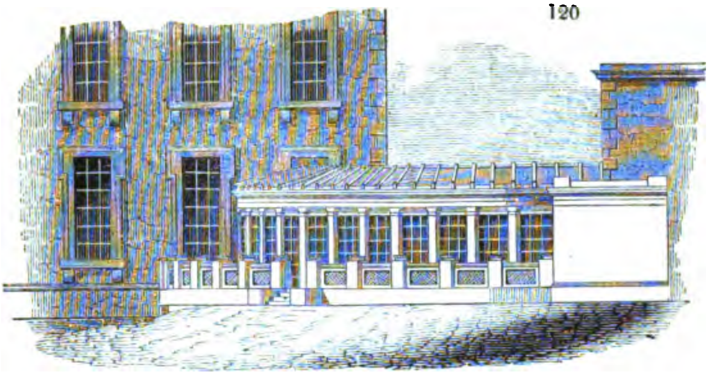
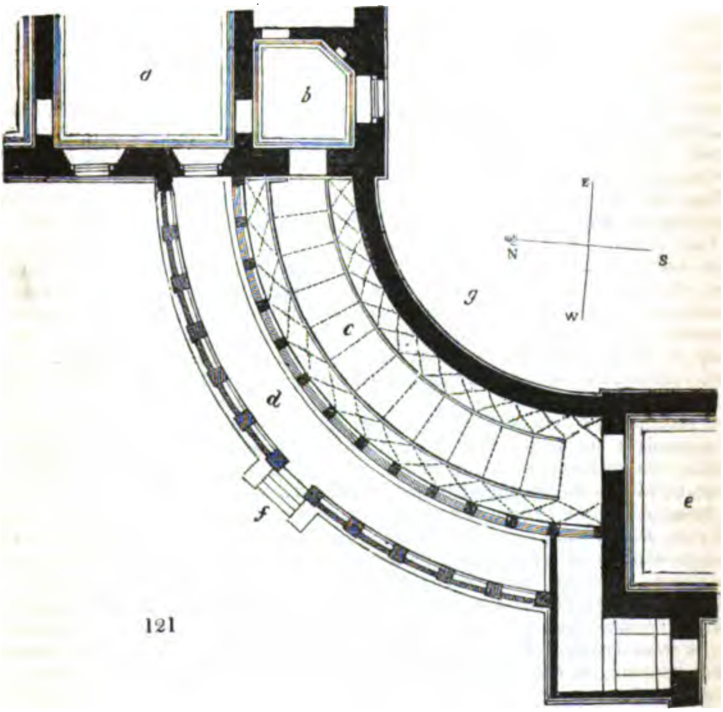


movable. The building is heated by warm water, contained in four 2-inch copper pipes, which run its entire length in a perforated iron kerb 8 × 8 that separates the flower border from the paved footway. In winter, the temperature may be raised, if required, as high as 50° or 60°. The flower borders are 3 ft.



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9 in. broad, and the treillage standards are let into stone bases 7 × 7 that never approach within 1 ft. 3 in. of the warming apparatus. The earth is 2 ft. deep, and drains are provided to carry off all superfluous moisture. There are 54 standards for climbing plants, and they are connected at top by circular iron

rods, forming arches which cross each other diagonally in the manner of Italian groining. The conservatory is about 11 ft. high; and in front of it is a paved terrace 8 ft. broad, having flower borders on each side of it 1 ft. 3 in. wide, to be planted with hardy annuals, small flowering shrubs, and a profusion of climbers. The latter are to be trained up the pilasters of the conservatory, and over the latticed balustrading of the terrace. Other shrubs and climbers are to be placed against the outer face of the terrace front, and a succession of handsome flowering plants in pots are to be placed in the tazza vases surmounting the piers of the terrace. — *R. V. Worcester.*

SHROPSHIRE. — *Shrewsbury.* Trinity Church in this town is just finished. The building is situated in Meole Coleham, in the parish of St. Julian, and is intended for the accommodation of the residents in Colehsm, who were unable to find sufficient room in their parish church, where only 788 could find sitting room out of a population of 3,000 inhabitants; 2,185 of whom reside in Coleham. The design for the church was furnished by Mr. Clinton, architect, formerly of Shrewsbury, but now of Cardiff. It has been erected by Mr. Stant of Shrewsbury, at an expense of 1,834*l.*; is neat, comfortable, and convenient: and, with the exception of the summit of the tower, whereon the weathercock is fixed, is rather ornamental. The brickwork is admirable. A considerable piece of ground, around the church, is set apart as a burial place. (*Shrewsbury Chronicle.*)

ART. IV. *Retrospective Criticism.*

A WORD in behalf of modern Houses. (*W. H. L., in reply to G. B. L.* See p. 502.) — Why it should be so I know not, yet certain it is, that G. B. L. is positively in a passion. If it is his sincere belief, that "buildings have greatly deteriorated within the last century," wherein, by the by, he out-Pugins Pugin himself, he is perfectly welcome to such an exceedingly comfortable opinion, for which, he will, no doubt, be hailed as a staunch ally, by the author of *Contrasts.* What I would chiefly remark is, that he is exceedingly mal-à-propos, however, if he thinks to recommend himself to that gentleman by seriously naming his work in the same breath with *Pickwick*, styling it withal a "grand production, well known to the scientific." A "grand production," forsooth! was there ever a more bungling, clumsy compliment! that is, if it really be intended as such, since it amounts almost to the sneer direct, to irony, and burlesque. Never did I pity Pugin till this moment. A man may endure to be well flagellated, cauterised, and scarified, by a stinging critique; for that will at least give him an opportunity of displaying his philosophy: but to be daubed over with the vilest treacle of flattery, and made a laughing-stock to the public, no philosophy can stand *that.* Wherefore, too, the *Contrasts* should be so well known to the scientific, I cannot guess; it being in itself every thing but a scientific work. Surely G. B. L. is not speaking of it at second hand, without having seen it himself? If so, let him procure it immediately, and he will then discover that it is polemical, sophistical, acrimonious, satirical, quizzical, dogmatical, papistical, vituperative, and eke critical, after a fashion; but, most assuredly, not scientific. It has something of the *facetum* too, yet, most assuredly of all, nothing whatever of the *molle*, in its composition. Nay, even its facetiousness is of such sort, that, though like *Pickwick*, it has caused many to laugh, it has been on the wrong side of their mouths.

That I may not seem altogether to evade what is more immediately directed against myself, I will own that I certainly do prefer fronts with cornices and other dressings, though they be only of stucco, to such bald erections as the houses in Bedford Row: not that I sneer at the latter, as G. B. L. seems to imagine, but merely referred to them as tolerably fair samples of street architecture in the last century. Here I must guard against misconception: it is the improved style of the present period, and not the material that I commend. It is not stucco, *quoad* stucco, that I am smitten with : on the contrary, I should give the preference to stone. At the same time, I do not understand wherefore either G. B. L., or Welby Pugin himself, should set his face so much against the use of stucco, when, according to both of them, it would appear, the architects of the present day are capable of doing very little that deserves to be executed in more durable material, and preserved to posterity. The latter gentleman, more especially, after pronouncing Regent Street and Regent's Park to be "nests of monstrosities" — wherein I do not say he is greatly in error, — ought rather to rejoice, than the contrary, at knowing they are only "lath and plaster." And I may here remark, *en passant*, that it is for him to explain his blowing hot and cold with the same breath, decrying the use of plaster or stucco in modern times, yet being any thing but shocked at old timber and plaster houses that lean so much forward as absolutely to threaten to fall down on passengers' heads in the street, and which most admirably exemplify Mr. Parsey's "Natural Convergence of Perpendiculars." If the public call out for stone-fronted houses, and will be satisfied with nothing less, they may have them for paying for them: but if they like not those conditions, they can hardly expect that builders will ruin themselves, either out of complaisance to them, or apprehension of G. B. L. From merely reading what that gentleman says, almost any one would imagine that I had professed myself to be particularly charmed with the architecture of Grosvenor Square. Not happening to know any thing of the episcopal palace at Durham, all I can say is, that I can easily conceive it to be a much finer piece of architecture than the bishop's residence here in town. Yet what that has to do with my remarks, I know not; neither can I possibly divine how G. B. L. can reconcile it to himself to speak so disparagingly of the houses in Grosvenor Square and its vicinity, immediately after taking the part of those in Bedford Row, which, any one but himself would allow to be some degrees inferior to the former, if not exactly in architecture, at least in their general air and character. But apropos to Bedford Row, which is probably his own *habitat*, are we to understand that the houses there bear a high premium, as "the many," it seems, are decidedly of opinion that they are very much better built in every respect than modern ones of the same rate, which have sprung up in such numbers ? If not, their liking for them must be of a curious sort, seeing that, notwithstanding all their admiration for the former, they prefer the latter for actual residence.

Towards the end of his reply, G. B. L. becomes so enigmatically obscure in his expressions, so mysterious and mystified, that even were I disposed to follow him any farther, I should be very much puzzled to do so. I therefore now dismiss him at once, consigning him to the tender mercies of Welby Pugin, who will, no doubt, on the very first opportunity, give him a sound castigation for his blundering, Malaprop compliments, and Marplot officiousness. — *W. H. L.*

G. B. W. in Reply to A. Y. W., p. 500. — What, another ally! another warning voice to the public! These critics scarcely give me breathing time No sooner have I answered the objections of one, than up springs another in some opposite quarter, like the head of a second hydra! A. Y. W., however, is not *very* severe; indeed, he rather amused me by his echo of Messrs. Coles and Cook. He reminds me of the anecdote told of Burke making an eloquent speech at some public meeting, when a country gentleman, who wished to speak to the same effect, rose and exclaimed vehemently, "I say ditto to Mr. Burke." So it is with A. Y. W., who, without deigning to particularise the errors of my design, or to point out in what manner he avoids such errors in his own, contents himself with saying, "ditto" to Mr. Coles. He appears to pique himself upon the originality of his truss, which I presume, he considers to consist in the idea of suspending the tie-beam from the queen posts by iron bars; for this, with the exception of his scantlings, which are certainly very original, is the only material variation he makes from those already given by

Messrs. Coles and Cook. This, although in my opinion an objectionable method, is by no means new; the tie-beam of the roof of Whitehall Chapel, erected many years ago, was thus suspended; but the rarity of its adoption in other instances is a tolerable proof that it is not of much value. I will now only add, and I am sure Mr. Coles will, with candour, subscribe to my opinion, that, notwithstanding A. Y. W. has had the benefit of his (Mr. Coles's) and Mr. Cook's remarks upon my truss; and although he chimes in so admirably with "G. B. W.'s design is faulty," yet he has fallen into the same error, (if error it be, which I doubt), of making the queens the principal supports of the truss; for it is clear, that in the security of his queen posts is involved the safety of his whole roof. — *G. B. W. London, October* 6. 1837.

Art. V. *Queries and Answers.*

New London Bridge. — One of the difficulties of constructing works of masonry, in such a soil as that which forms the bottom of the river Thames, may be imagined from the fact that the foundations of New London Bridge have subsided 11 ft. since its erection in 1831. (*Report on the accident which happened to the Thames Tunnel, in Morn. Chron.*) Can any of your readers inform me if this extraordinary statement be correct, and if so, how it happens that all the arches have sunk to the same depth; because, if this had not been the case, there must have been rents exhibited somewhere, which there are not; or at least, there were not when I passed under the bridge in a wherry on my way to Woolwich, on the 27th of July last. — *H. G. Pitman. Windsor, Aug.* 28. 1837.

Rendering Thatch incombustible. — A. M. G. Barentin of Leipsic lately invented a method of preparing thatched roofs in such a manner as not to be liable to danger from fire. The Saxon government has had M. Barentin's thatch tried, and has approved of it so much as to order it to be generally made use of. (*Scotsman*, Sep. 20. 1837.) Alum would have some effect, both in preserving thatch, and in rendering it incombustible. We know an instance of a gentleman Kyanising the thatch to be used on an ornamental cottage roof, and we hope to be able in a few years to state the result. In the mean time we should be glad to learn if any of our readers know the German secret; and whether any have tried Kyanising with thatch, and what has been the expense per superficial yard of thatched roof, or per truss or load of thatch. — *Cond.*

A Town with spiral Streets. — You have frequently suggested plans for new towns and cities: did you ever think of the beautiful effects which would be produced by a spiral street being continued from the centre to the suburb, with straight diverging streets intersecting it? The straight streets would be the principal business thoroughfares, and the spiral one would be chiefly for the public buildings, and the houses of retired or professional persons. The cathedral, theatre, museum, galleries of art, &c., would be towards the centre, and other important public buildings would be placed in the spiral street, to form a terminating object to each of the straight diverging streets, at the other ends of which, next the public walk and the country, might be placed columns or obelisks. Supposing the site of the city or town to be slightly conical, the public buildings in the centre would be seen from nearly every part, even from the straight streets over the tops of the buildings terminating them; and this would frequently produce most rich and pleasing combinations of architectural objects. I need say no more on the subject, for you will be able to imagine the detailed arrangement of such a plan. I should like much to hear the opinion of you or any of your readers: also to know whether any town with spiral streets has been built. — *R. V. Worcester, July* 17. 1837.

THE
ARCHITECTURAL MAGAZINE.

DECEMBER, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A summary View of the Progress of Architecture in Britain during the past Year; with some Notices relative to its State in Foreign Countries.* By the CONDUCTOR.

THE year 1837 scarcely affords any marked feature of architectural progress, such as the competition for, or completion of, any great national work; but it exhibits what is much more satisfactory, a general spirit of architectural improvement in the metropolis, throughout Great Britain, and, to some extent, even in foreign countries.

In London, there is scarcely a principal street that does not exhibit some new architectural feature; public institutions and companies, and even eminent commercial houses, being alike eager to attract attention by an improved architecture without, no less than by superior arrangements within. These kinds of improvement have been going on, more or less rapidly, since the peace of 1814; and the former appears to have received a considerable stimulus, a few years ago, from the general rage for ornamenting the fronts of gin-shops and public-houses. Most of these buildings, indeed, exhibit very inferior specimens of design; but, as they have advanced a step beyond what had gone before in the same kind of houses, they ought not to be despised; and, however common it may be for architects to laugh at the splendour of the gin temples, yet it cannot be denied, we think, that to them the architects and architecture of the metropolis are considerably indebted. Among the buildings of public companies may be included the club-houses, bazaars, insurance offices, and banking-houses; and, among these, we may point to the Oxford and Cambridge University Club-house in Pall Mall, the Pantheon Bazaar in Oxford Street, and the Atlas Fire-office in Cheapside, as very handsome public ornaments. The Pantheon is deservedly admired for its interior arrangement and decoration, and the Fire-office for its exterior elevation. Among public institutions may be noticed the Surgeons' Hall in Lincoln's Inn Fields, and the City School in Wood Street, Cheapside; and a number of other schools, together with various churches and chapels, might be enumerated, if the object were to do more than take a cursory glance at general features. The New Palace at Pimlico has this year been taken possession of by Her Majesty, and the New Houses of Parliament commenced.

Throughout the country, architectural improvement is general. There is hardly a large town in which some church or school has not been recently erected. New markets or town-halls are completed in some places, and in progress in others; and public cemeteries and cemetery chapels are increasing every year. Perhaps the best markets completed during the past year are that at Exeter by Mr. Fowler, and that at Newcastle by Mr. Grainger. For improvements going forward in Birmingham, Manchester, Liverpool, Chester, Lincoln, Cambridge, York, and in the country of England generally, we refer to an article by Mr. Godwin, at p. 484. The town in England which is, perhaps, undergoing the greatest architectural improvements is, however, Newcastle, where Grey Street promises to be, when completed, one of the handsomest streets in England.

On looking over our Provincial Notices, under the heads of Scotland and Ireland, evidence will be found that architecture is not stationary in these countries, though we cannot point to any particular feature in either which characterises the year 1837.

Among foreign countries, France appears to take the lead; in proof of which, we refer to our Report on the public buildings in Paris, p. 542. Munich and Berlin may be considered as next in the order of architectural ameliorations; but Belgium, Russia, and even Greece, Italy, and Spain, might be cited, as will appear by the paragraphs under their respective heads in our Foreign Notices. The state of architecture in the United States is noticed p. 544; by which it appears that banking houses, hotels, and theatres are erecting, with an increased regard to architectural effect.

If the progress of architecture in Britain is considerable, that of engineering may be considered as extraordinary. The railway between Birmingham and Liverpool has been opened in the course of the year, and the following railways are in progress: — the London and Birmingham railway, which is already opened as far as Tring, and which will probably be completed in 1839; the Southampton railway, which will probably be completed about the same time; the Great Western railway, the works of which are far advanced; and the Eastern Counties' railway; the Northern and Eastern railway; the Croydon, Greenwich, and Brighton railways; and the London Junction railway; which are all more or less in progress. The works in the Thames Tunnel, that very remarkable undertaking, which, now that the company has received the assistance of government, may be considered as national, are going steadily forward, though occasionally interrupted by irruptions of the river.

The architectural literature of the year includes the *Transactions of the Institute of British Architects* (see p. 33.), and the *Transactions of the Institution of Civil Engineers*, both of which contain many valuable papers; several pamphlets relative to the new Houses of Parliament, which contain some interesting discussions; the Report from the Select Committee on Arts and their connexion with Manufactures, which indicates an increased attention to these subjects on the part of government; a translation, with notes, of *Vicat on Mortars and Cements*, a work which was much wanted; and a *Lecture on the Dry Rot*, by Dr. Dickson, which contains information respecting the Kyanising process, well deserving the attention of builders; who, in general, do not seem to understand the mode of its application. Among the articles in the present Volume of this Magazine, the two which we consider the most valuable are those by Dr. Ure and Mr. Ritchie, on Warming and Ventilating. For critical remarks, those of Candidus are highly instructive; and there are many papers of a practical nature, by other writers, not less so. We refer our readers to the Table of Contents.

Art. II. *The Poetry of Architecture; or the Architecture of the Nations of Europe considered in its Association with natural Scenery and national Character.* By Kata Phusin.

No. 2. The Cottage.

I. *The Lowland Cottage. — England and France.*

Of all embellishments by which the efforts of man can enhance the beauty of natural scenery, those are the most effective which can give animation to the scene, while the spirit which they bestow is in unison with its general character. It is generally desirable to indicate the presence of animated existence in a scene of natural beauty; but only of such existence as shall be imbued with the spirit, and shall partake of the essence, of the beauty, which, without it, would be dead. If our object, therefore, is to embellish a scene the character of which is peaceful and unpretending, we must not erect a building fit for the abode of wealth or pride. However beautiful or imposing in itself, such an object immediately indicates the presence of a kind of existence unsuited to the scenery which it inhabits; and of a mind which, when it sought retirement, was unacquainted with its own ruling feelings, and which consequently excites no sympathy in ours: but, if we erect a dwelling which may appear adapted to the wants, and sufficient for the comfort, of a gentle heart and lowly mind, we have instantly attained our object: we have bestowed animation, but we have not disturbed repose.

It is for this reason that the cottage is one of the embellishments of natural scenery which deserve attentive consideration. It is beautiful always, and every where; whether looking out of the woody dingle with its eye-like window, and sending up the motion of azure smoke between the silver trunks of aged trees; or grouped among the bright corn fields of the fruitful plain; or forming grey clusters along the slope of the mountain side, the cottage always gives the idea of a thing to be beloved: a quiet life-giving voice, that is as peaceful as silence itself.

With these feelings, we shall devote some time to the consideration of the prevailing characters, and national peculiarities, of European cottages. The principal thing worthy of observation in the lowland cottage of England is its finished neatness. The thatch is firmly pegged down, and mathematically leveled at the edges; and, though the martin is permitted to attach his humble domicile, in undisturbed security, to the eaves, he may be considered as enhancing the effect of the cottage, by increasing its usefulness, and making it contribute to the comfort of more beings than one. The whitewash is stainless, and its rough surface catches a side light as brightly as a front one: the luxuriant rose is trained gracefully over the window; and the gleaming lattice, divided not into heavy squares, but into small pointed diamonds, is thrown half open, as is just discovered by its glance among the green leaves of the sweet briar, to admit the breeze, that, as it passes over the flowers, becomes full of their fragrance. The light wooden porch breaks the flat of the cottage face by its projection; and a branch or two of wandering honeysuckle spread over the low hatch. A few square feet of garden, and a latched wicket, persuading the weary and dusty pedestrian, with expressive eloquence, to lean upon it for an instant, and request a drink of water or milk, complete a picture, which, if it be far enough from London to be unspoiled by town sophistications, is a very perfect thing in its way. The ideas it awakens are agreeable; and the architecture is all that we want in such a situation. It is pretty and appropriate; and, if it boasted of any other perfection, it would be at the expense of its propriety.

Let us now cross the Channel, and endeavour to find a country cottage on the other side, if we can; for it is a difficult matter. There are many villages; but such a thing as an isolated cottage is extremely rare. Let us try one or two of the green valleys among the chalk eminences which sweep from Abbeville to Rouen. Here is a cottage at last, and a picturesque one, which is more than we could say for the English domicile. What, then, is the difference? There is a general air of *nonchalance* about the French peasant's habitation, which is aided by a perfect want of every thing like neatness; and rendered more conspicuous by some points about the building which have a look of neglected beauty, and obliterated ornament. Half of the whitewash is worn off, and the other half coloured by various mosses and wandering lichens, which have been permitted to vegetate upon it, and which, though beautiful, constitute a kind of beauty from which the ideas of age and decay are inseparable. The tall roof of the garret window stands fantastically out; and underneath it, where, in England, we had a plain double lattice, is a deep recess, flatly arched at the top, built of solid masses of grey stone, fluted on the edge; while the brightness of the glass within (if there be any) is lost in shade, causing the recess to appear to the observer like a dark eye. The door has the same character: it is also of stone, which is so much broken and disguised as to prevent it from giving any idea of strength or stability. The entrance is always open: no roses, or any thing else, are wreathed about it; several outhouses, built in the same style, give the building extent; and the group (in all probability, the dependency of some large old château in the distance) does not peep out of copse, or thicket, or a group of tall and beautiful trees, but stands comfortlessly between two individuals of the column of long-trunked fac-simile elms, which keep guard along the length of the public road.

Now, let it be observed how perfectly, how singularly, the distinctive characters of these two cottages agree with those of the countries in which they are built; and of the people for whose use they are constructed. England is a country whose every scene is in miniature. Its green valleys are not wide; its dewy hills are not high; its forests are of no extent, or, rather, it has nothing that can pretend to a more sounding title than that of "wood." Its champaigns are minutely chequered into fields: we never can see far at a time; and there is a sense of something inexpressible, except by the truly English word, "snug," in every quiet nook and sheltered lane. The English cottage, therefore, is equally small, equally sheltered, equally invisible at a distance.

But France is a country on a large scale. Low, but long, hills sweep away for miles into vast uninterrupted champaigns; immense forests shadow the country for hundreds of square miles, without once letting through the light of day; its pastures and arable land are divided on the same scale; there are no fences; we can hardly place ourselves in any spot where we shall not see for leagues around; and there is a kind of comfortless sublimity in the size of every scene. The French cottage, therefore, is on the same scale, equally large and desolate-looking; but we shall see, presently, that it can arouse feelings which, though they cannot be said to give it sublimity, yet are of a higher order than any which can be awakened at the sight of the English cottage.

Again, every bit of cultivated ground in England has a finished neatness; the fields are all divided by hedges or fences; the fruit trees are neatly pruned; the roads beautifully made, &c. Every thing is the reverse in France: the fields are distinguished by the nature of the crops they bear; the fruit trees are overgrown with moss and mistletoe; and the roads immeasurably wide, and miserably made.

So much for the character of the two cottages, as they assimilate with the countries in which they are found. Let us now see how they assimilate with the character of the people by whom they are built. England is a country of perpetually increasing prosperity and active enterprise; but, for that very reason, nothing is allowed to remain till it gets old. Large old trees are cut down for timber; old houses are pulled down for the materials; and old furniture is laughed at and neglected. Every thing is perpetually altered and renewed by the activity of invention and improvement. The cottage, consequently, has no dilapidated look about it; it is never suffered to get old; it is used as long as it is comfortable, and then taken down and rebuilt; for it was originally raised in a style incapable of resisting the ravages of time. But, in France, there prevail two opposite feelings, both in the extreme; that of the old pedigreed population, which preserves unlimitedly; and that of the modern revolutionists, which destroys unmercifully. Every object has partly the appearance of having been preserved with infinite care from an indefinite age, and partly exhibits the evidence of recent ill-treatment and disfiguration. Primeval forests rear their vast trunks over those of many younger generations growing up beside them; the château or the palace, showing, by its style of architecture, its venerable age, bears the marks of the cannon ball, and, from neglect, is withering into desolation. Little is renewed: there is little spirit of improvement; and the customs which prevailed centuries ago are still taught by the patriarchs of the families to their grandchildren. The French cottage, therefore, is just such as we should have expected from the disposition of its inhabitants: its massive windows, its broken ornaments, its whole air and appearance, all tell the same tale of venerable age, respected and preserved, till at last its dilapidation wears an appearance of neglect. Again, the Englishman will sacrifice every thing to comfort, and will not only take great pains to secure it, but he has generally also the power of doing so; for the English peasant is, on the average, wealthier than the French. The French peasant has no idea of comfort, and, therefore, makes no effort to secure it. This difference in the character of their inhabitants is, as we have seen, written on the fronts of the respective cottages. The Englishman is, also, fond of display; but the ornaments, exterior and interior, with which he adorns his dwelling, however small it may be, are either to show the extent of his possessions, or to contribute to some personal profit or gratification: they never seem designed for the sake of ornament alone. Thus, his wife's love of display is shown by the rows of useless crockery in her cupboard; and his own by the rose tree at the front door, from which he may obtain an early bud to stick in the button-hole of his best blue côat on Sundays: the honeysuckle is cultivated for its smell, the garden for its cabbages. Not so in France. There, the meanest peasant, with an equal or greater love of display, embellishes his dwelling as much as lies in his power, solely for the gratification of his feeling of what is agreeable to the eye. The gable of his roof is prettily shaped; the niche at its corner is richly carved; the wooden beams, if there be any, are fashioned into grotesque figures; and even the "air négligé" and general dilapidation of the building tell a thousand times more agreeably to an eye accustomed to the picturesque, than the spruce preservation of the English cottage.

No building which we feel to excite a sentiment of mere complacency can be said to be in good taste. On the contrary, when the building is of such a class, that it can neither astonish by its beauty, nor impress by its sublimity, and when it is likewise placed in a situation so uninteresting as to render something more than mere fitness or propriety necessary, and to compel the eye to expect something from the building itself, a gentle contrast of feeling in that building is exceedingly desirable; and, if possible, a sense that something has past away, the presence of which would have bestowed a deeper interest on the whole scene. The fancy will immediately try to recover this, and, in the endeavour, will obtain the desired effect from an indefinite cause.

Now, the French cottage cannot please by its propriety, for it can only be adapted to the ugliness around; and, as it ought to be, and cannot but be, adapted to this, it is still less able to please by its beauty. How, then, can it please? There is no pretence to gaiety in its appearance, no green flower-pots in ornamental lattices; but the substantial style of any ornaments it may possess, the recessed windows, the stone carvings, and the general size of the whole, unite to produce an impression of the building having once been fit for the residence of prouder inhabitants; of its having once possessed strength, which is now withered, and beauty, which is now faded. This sense of something lost; something which has been, and is not, is precisely what is wanted. The imagination is set actively to work in an instant; and we are made aware of the presence of a beauty, the more pleasing because visionary; and, while the eye is pitying the actual humility of the present building, the mind is admiring the imagined pride of the past. Every mark of dilapidation increases this feeling; while these very marks (the fractures of the stone, the lichens of the mouldering wall, and the graceful lines of the sinking roof) are all delightful in themselves.

Thus, we have shown that, while the English cottage is pretty from its propriety, the French cottage, having the same connexion with its climate, country, and people, produces such a contrast of feeling as bestows on it a beauty addressing itself to the mind, and is therefore in perfectly good taste. If we are asked why, in this instance, good taste produces only what every traveller feels to be not in the least striking, we reply that, where the surrounding circumstances are unfavourable, the very adaptation to them which we have declared to be necessary renders the building uninteresting; and that, in the next paper, we shall see a very different result from the operations of equally good taste in adapting a cottage to its situation, in one of the noblest districts of Europe. Our subject will be, the Lowland Cottage of North Italy.

Oxford, Sept., 1837.

Art. III. *A Suggestion as to the Manner in which the dilapidated Apex of the Luxor Obelisk at Paris should be restored to its original Form.* From the French of J. J. Hittorf, Architect, Honorary and Corresponding Member of the Institute of British Architects.

(Read at the Ordinary Meeting of the Institute of British Architects, Feb. 27. 1837.)

It would appear that the pyramidion, or apex, of the Luxor Obelisk, presented by the Pacha of Egypt to the King of the French, was in an imperfect, or truncated, state; neither terminating, like other obelisks, in a point, nor with its upper part covered with hieroglyphics. By some it was imagined that the Egyptians had left it designedly in this dilapidated condition; and by others, that the apex had been thus disfigured wantonly. Among these conflicting opinions, Monsieur Hittorff, architect of the pedestal of the obelisk, and of the improvements in the Place de la Concorde, was led to conceive the idea that the pyramidion had anciently been covered with bronze; the reasons for which supposition he has explained at length in a pamphlet just published, and of which the following is an almost literal translation.—M.I.B.A.

"On examining with attention the Luxor Obelisk, it cannot be doubted that the state of imperfection in which its summit was found (see *figs.* 122. to 126.) was its original one; and that

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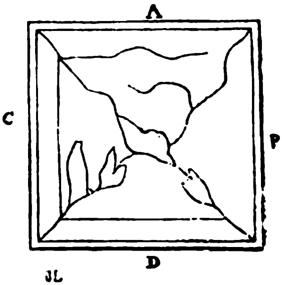

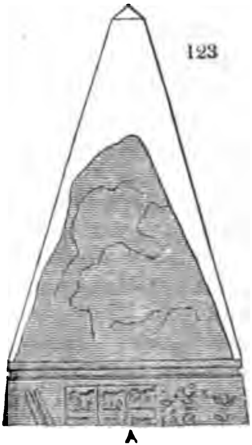
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the monolith which composes its shaft was never surmounted by a pyramidion entirely of granite, as were the greater number of the obelisks of Egypt and Rome. This, then, is an exception to the general rule. In fact, instead of presenting a small pyramid, whose base was equal to the upper square of the obelisk 4 ft. 11 in. by 5 ft., and the height equal to one of the sides of the lower square at the base of the obelisk, about 8 ft. square, the figure of the pyramidion is found to be as follows: — 1st, To the height of about 1 ft. 8 in., it consists of a truncated pyramid, shown in *figs.* 123. to 126., having a square base, about 4 ft. 7 in. by 4 ft. 9 in. which leaves, at the point of separation between the monolith and the pyramidion, a flat ledge of about 2 in. wide, as shown more in detail in the sections, *figs.* 127. 128. 2dly, The upper part of the pyramidion consists of a small irregular pyramid, about 3 ft. 3 in. high, above the truncated pyramid, and having a different inclination. This is the part which is unfinished. The point is but irregularly rounded; and on two of its angles, near the top, there are some notches, which, notwithstanding the irregularity of their situation and size, appear nevertheless to have been made originally, and for a special purpose. The pyramidion of the Luxor Obelisk has, consequently, neither the height, nor breadth, nor form, of the ordinary pyramidions in granite. It is not finished on all its sides; and what is particularly remarkable is, that it leaves upon the four faces of the upper arris of the monolith a continued receding superfice, or ledge, which presents the possibility of its serving as a support to a pyramidion composed of a solid substance, which, in some parts, could scarcely have been one third of an inch thick (see *fig.* 125. at E), and which, being placed thereon, completed the summit of the obelisk, without diminishing the length of the block of granite which formed the shaft. *Fig.* 122. shows a vertical profile of the summit of the pyramidion. Hence, of two things, one must naturally follow: either the pyramidion of the Luxor Obelisk has been, since its formation, exposed to the view of the Egyptians as it now is, which is scarcely probable, on account of its broken state and form, its irregular mass, and also because it was the "pendant" of another obelisk

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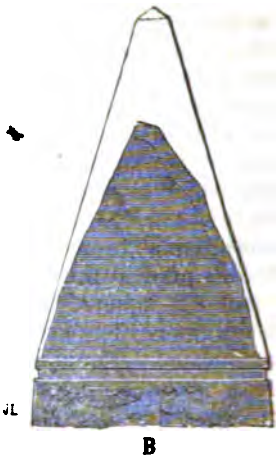

still larger, of which the pyramidion in granite is much more elevated, and appears to have the proportions generally admitted; or another material has been substituted for the granite which is deficient, so as to complete the obelisk, and leaving the pyramidion in the state we find it, without taking from the monument, by diminishing its length, any part of its importance as a monolith. The Luxor Obelisk, in its new destination, and the situation in which it is placed, cannot at Paris, any more than at Thebes, be left in its present state of imperfection; and, the restoration of its pyramidion having been considered indispensable, the point in question was to endeavour to make the restitution coincide with the intention of the original design. To carry this into effect, it was necessary not only to leave all that remained of the pyramidion, but to add to it what was requisite to restore it to its original state. On these data, which alone were compatible with its reasonable restoration, bronze appeared, from its nature, and the undeniable proofs of its analogous use in other Egyptian monuments, to be the material most suitable to supplying the given want, and also that most probably originally employed. The choice of this material appears the more probable, since the persons engaged at Luxor told me, on my first visit to the vessel in which the obelisk was brought to Paris, that they had seen, in the interior of the palace in front of which the monolith originally stood, the figured representation of an obelisk the pyramidion of which was painted yellow. This assertion being in conformity with the idea which the inspection of the pyramidion had suggested to me, converted my conjecture into certainty. However, the proposition was contested; and the prevailing objection was a very decided one; or rather, I should say, was an absolute negation, on the ground that there was no instance of a custom existing among the ancient Egyptians of using bronze gilt for the pyramidions of obelisks. Besides which, it was thought that the reflection of the sun from the brilliant surface

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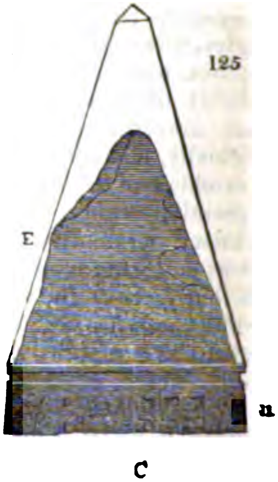
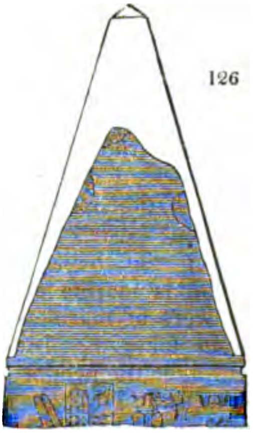
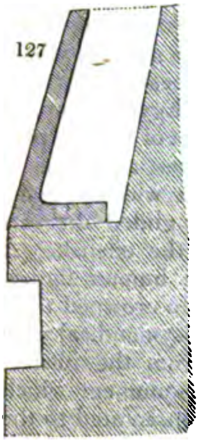
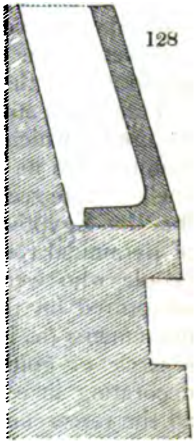




of the gilded metal would produce a dazzling effect, and not allow its form to be clearly distinguished. Any other material, it was added, which did not present the same appearance as the obelisk itself, would take from its beauty; and, consequently, only a pyramidion in granite would answer the purpose. It was principally on account of the impossibility of fixing such a block on the top of the obelisk, without destroying more or less the pyramidion which the Egyptians had preserved, that the pyramidion in bronze was proposed to be adopted, but without the addition of gilding, which I had considered to be absolutely requisite. It was, in fact, to be feared that the oxide of bronze, which would be produced on the inclined planes of the pyramidion, would spread over the obelisk, and occasion on its sides, so interesting from their hieroglyphics, green spots, which would change the colour of the granite, and deface the precious forms of the sculpture with which they are now adorned. In this point of view alone, the necessity for the gilding seemed to me sufficiently established; but, in support it, of several other considerations presented themselves. These considerations were, that the Obelisk of Luxor, put up, not in a museum of antiquities, but in the centre of the Place de la Concorde, would be there distinguished, not only as a monument most interesting from its antiquity, but likewise as an object of embellishment, which would contribute to the decoration of this magnificent square. In order to effect this double purpose, it should not be regarded as a mere object of curiosity in its mutilated state, however precious it may be in itself; but as a monument complete, or completed, and in harmony with the surrounding objects. The obelisk, surmounted by a pyramidion in bronze gilt, would have harmonised with the twenty columns which are to accompany it. In the centre of these





columns, the capitals and other parts of which will be enriched with gilding, a gilt pyramidion would have reflected in the distance the brilliancy of its surfaces. The Monolith of Luxor, in perfect harmony with the surrounding decorations, would have been the principal object, as much from its splendid aspect as its imposing size. As to whether a pyramidion different in its colour from granite would mar the conventional beauty of the obelisk, it has been decidedly negatived by the Egyptians, as well as amongst other nations, both ancient and modern, who have never hesitated to employ for the shafts of columns marble of one colour, while the capitals and the bases were of marble of a different colour, or of bronze gilt; without for a moment supposing that these different colours would alter the proportion, or destroy the effect, of an order in architecture; though this order was, of course, much better known, and its details more generally admitted, than those of obelisks. Besides, the reflection of the sun, which the objectors seem to fear (and which fear could only be founded on the supposition that it would exist constantly on the four sides of the pyramidion), could only last a few minutes each day, since the sun during the rest of the day would strike on one side only, or, at the most, on two sides at the same time. This very improbable inconvenience would be well compensated by the varied and picturesque effects of the play of light on the gilding, which would render the aspect more rich and more agreeable.

Finally, in studying the general character of Egyptian architecture (in which polychromy, or the employment of colour, predominates in its application to temples and palaces, as well as to obelisks), we see that there is nothing at variance with the belief that the Egyptians would, in certain cases, have gilded the sort of pyramidal roof which covers the summit of the obelisk. A people who were in the habit of gilding the human figure, sculptured on the cases of their mummies; who crowned their monuments (as in the instance of the tomb of Osymandias) with a circle of gold; would never have shrunk from the idea of decorating in a similar manner a species of monument which all the researches of the learned teach us was consecrated to the sun; more particularly, as the name of the monument expressed in the Egyptian language (according to Pliny) one of the rays of that luminary; and that yellow and gold were in all times, and everywhere, the emblematic colour and metal consecrated to that divinity.

If I am permitted to consider the reasons I have just stated, and which have guided me in my researches, sufficiently conclusive to convince the artists and the learned who are free from prejudices, I shall feel still more sure of their concurrence, when I add to the almost incontestable probabilities already mentioned some historical and undoubted proofs of the use made by the Egyptians of pyramidions of bronze gilt, to surmount their obelisks of granite. The following is a quotation on this subject from a note of M. Langlès, in his translation of *Norden* (liv. iii. p. 315.): — " Since treating of obelisks, I am enabled to record a fact relative to those of Heliopolis: that which we now see lying on the sand was overthrown the 14th of Ramadhan, 656 (Sept. 15. 1258). Under this obelisk were found more than 200 qanthârs of copperas; and from its summit was taken more than 10,000 dynârs. The summit of the obelisk, if one may credit the Arabs, was surmounted by a sort of hood of copper. This fact is taken from a historical book of Al-Maqryzy, No. 672. of the Arab MSS. in the Bibliothèque Nationale." The passage of Maqryzy to which M. Langlès refers is quoted and translated by M. Sylvestre de Sacy, in his " Observations on the Origin of the Names given by the Greeks to the Pyramids of Egypt, and on other Subjects relative to Egyptian Antiquities." (*Mag. Encyc.*, vi^{me} année, tom. vi. p. 419.) " The description of the obelisks of Heliopolis will receive some explanation from the following passages of Maqryzy, with which I shall conclude: — ' The 4th Ramadhan, 656, one of the two obelisks of Pharaoh, at Mataria, in the environs of Cairo, fell down. There were found about 200 quintals of copper, and about 10,000 dynârs were taken from the top. Kodhai says: Aïn-schems (Heliopolis) is the temple (or city) of the sun. There are in this place 400 columns; and it is not possible to see anything more wonderful than these columns and their peculiarities. On the summits are two pointed caps of copper. When the Nile overflows, water flows from this summit. The two columns which are seen at Aïn-Schems, says Ebn-Djardawia, are relics of others which were formerly there. On the top of each is a covering of copper; and the water dropping from this covering descends to about the middle of the column, and renders it green and humid. Mohammed, son of Abdarrahim, says, in a work entitled *Tohfat Allabab*, that this obelisk is square, formed of a single block, pointed at the top, and raised upon a base of stone; that on the top is a covering of copper, as yellow as gold; above which is the figure of a man sitting on his chair, looking at the rising sun. That under this cover the water runs down about ten cubits, and causes a certain water-moss to vegetate; on which, he adds, drops of water are always glittering." After these quotations from a celebrated Arab writer who lived in the 14th and 15th centuries, and whom M. Sylvestre de Sacy calls the Varro of Mahometan Egypt, and who has taken these particulars from three authors who have seen what they describe, it is impossible to doubt the original existence of pyramidions in bronze gilt. History is thus proved to give its support to the argument; and it appears that, by covering the Obelisk of Luxor in the manner above recommended, we shall act in what is unquestionably the best mode of restoring it to its primitive aspect. It must be confessed, that the words "gilt pyramidions" are not to be found in the passages quoted by Maqryzy; but the expression of Mohammed, that "the copper was as yellow as gold," leaves no doubt as to the application of the gilding. This fact, already strengthened by that of the pyramidion painted yellow found at Luxor, is still farther confirmed by the peculiarity of the green water which flowed down the obelisks of Heliopolis, from beneath the covering in copper;. and which authorises the conjecture, that there existed some apertures (probably accidental), through which the evaporation of the waters of the well penetrated, collected into drops, and then ran down the stone. Had it been otherwise, the exterior surfaces would have been oxidised, and would have become green; and, consequently, if they appeared yellow, like gold, they must have been gilded. It is thus clear that, if the obelisk were now surmounted by a gilt pyramidion, it would not be the first time it was thus adorned; and the monolith would have presented itself to the admiration of the inhabitants of Paris, such as it was when admired, nearly 4000 years ago, by the inhabitants of Thebes.

My attention has since been drawn to a very interesting English work, *On the Topography of Thebes;* in which I find, at p. 316., an ample confirmation of my ideas on the point in question.

Subsequently to my writing the above essay, it has been decided that the pyramidion of the Obelisk of Luxor shall be restored in mastic. This restoration, the absurdity of which will soon be proved by the rain and frost, is of little consequence, since it will not prevent us from having recourse to the bronze gilt pyramidion, which I have so strongly recommended.

ART. IV. *On Church Architecture, with Designs for a Church.* (Figs. 129. to 132.) By F.

THE great number of new churches which have been lately erected, "however their architects may have been limited in other respects, certainly allowed great diversity of design; instead of which they look one and all as if done up from the same receipt." This is the observation of your correspondent Candidus; and I am right glad that one so able has commenced an attack which, in time, must overthrow designing according to custom. For the present, I shall speak only of church architecture as it is. To begin with the beginning, we will suppose a plan to be set before an architect, of a church which he has built, or is about to build; and that he is asked why he has

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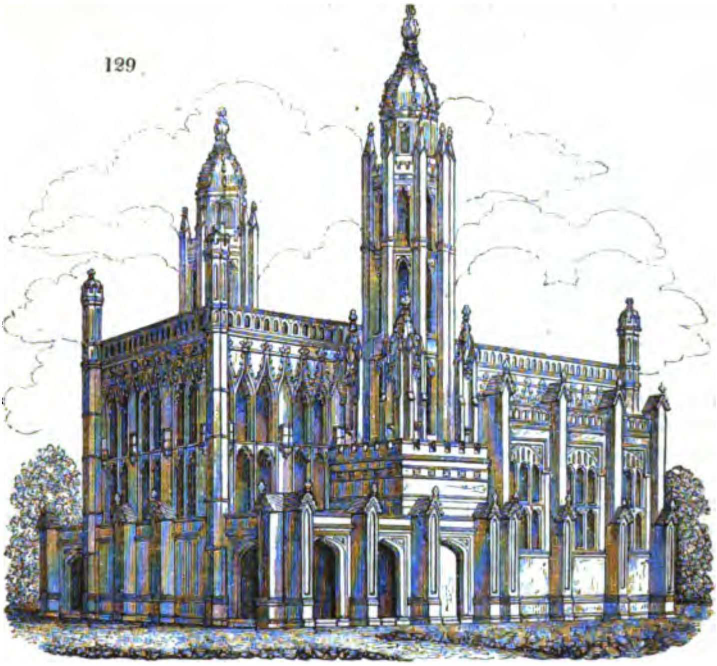

placed the tower and entrances at the west end of the church. His answer will probably be, Because it is customary; or, Because the architects in the middle ages did the same when they built churches; or, if he be inclined to be more candid, Because such was the case in the building from which he copied his design. Now, these are doughty reasons, and will abide examination; for, if you attempt to show any fallacy in the adopted plan, you must hurl destruction upon those examples which have been held up to us almost from time immemorial as inimitable. Alas! that our cathedral churches should be chosen as citadels upon the strength of which depend the very vitals of our present system of designing churches: for their plan is our plan, with this difference, that their buildings were large, and our buildings are small. But let us search further into this subject, by asking the architects of the middle ages why they placed the towers and entrances at the west end of the church. In words, they will not answer; but they conduct the questioner within the western porch, and cry, "Behold!" the long vista and the lofty aile answer, "It is that you may see us thus." Now, let the modern architect examine his plan, and tell us whether his reasons for a west end tower and entrance are equal to these. I will venture to answer, No. Then, if we have not the same reasons, why retain the same plan? If our mode of worship requires conveniences different from that of our forefathers, why retain the same mode of constructing our churches? Are we to give up architectural effect, as incompatible with places of worship, and at the same time gain thereby no convenience? Surely not. Let each architect, when making a plan of a church, ask his own reason what he is to do, and not consult that of another. For instance, I have thought, in the plan of a church to suit our mode of worship, that the point in the outer walls from which each pew, and each class of pews, can be gained in the shortest possible distance, is the best situation for an entrance; and that for the following reason: — that a person entering a church, after the congregation has partly assembled, or, as frequently happens, after service is commenced, may gain his sitting as soon as possible, and avoid at least one half the disturbance otherwise created, by having only half the length of an aile to traverse. For the general form of the church, that plan appears the best which concentrates the greatest number of benches or pews within a given distance of the preacher; and, for this reason, a square plan is better than an oblong one. When the architect has thus consulted his reason, he is certain of obtaining convenience; and his architectural knowledge must be exerted to add effect and expression. Many difficulties will arise to oppose the easy progress of his design; but the overcoming of difficulties has always been allowed to be a source of pleasure; and it frequently happens that a difficulty overcome gives rise to a new form or combination of forms, which would otherwise have lain dormant in the mind of the architect.

I have a few observations to offer to the church architect, if he will deign to accept them, and they are as follows: — Never let the inner entrance-door open under a gallery, or the effect of the interior of the church will be irrecoverably lost. If you will have western entrances and western galleries, contrive to have porches, or a cloister, to take you to the gallery front before you enter the church. Rather prefer a western window to an eastern one; and occupy the space behind the pulpit or communion table with sculpture. A picture (say one of Raphael's cartoons) might be chosen to afford a group; and by this means you will gain an assemblage of forms well adapted for their situation as a background to the preacher; upon whom the eyes of the congregation are generally fixed: but always, in the interior of the church, introduce some little sculpture, if it be only a tablet, to remind the assembly that their purpose there is to prepare for death. In some designs, staircases may be made effective by being introduced into the churches; and, in lieu of being partitioned off by wood framing or brick walls, let them be open, and wind about a square or round pillar. To give effect, the pillar must be formed of open screen-work, finished at the

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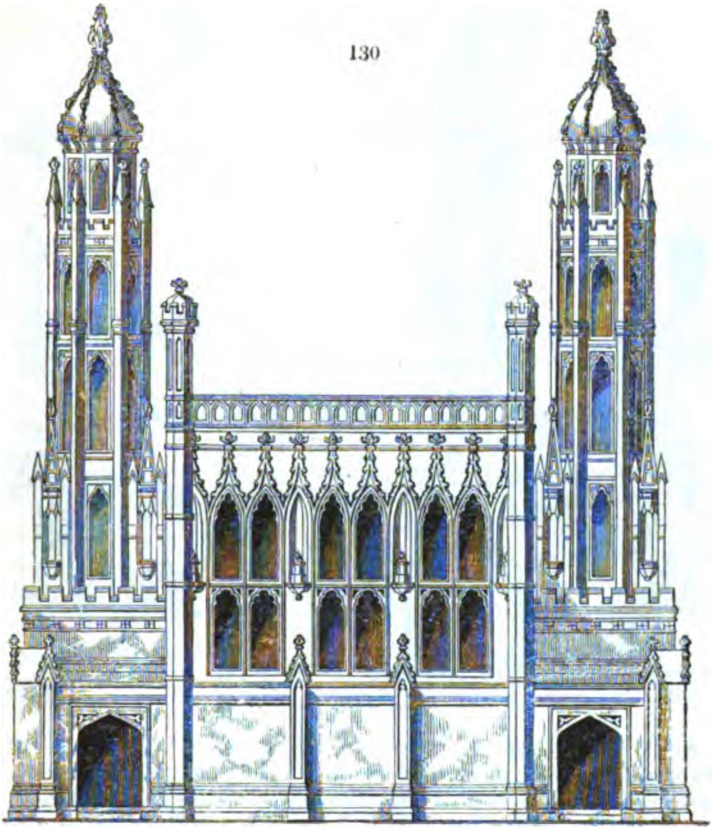
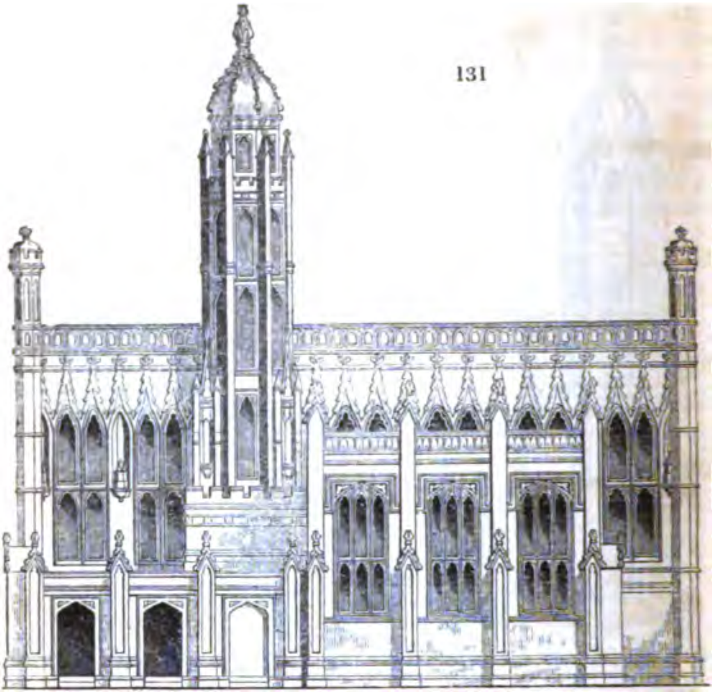


West Elevation.

top turret-like, or with a pinnacle, reaching nearly to the ceiling of the church; and the steps must be guarded by ornamented balustrades. If you have side galleries, contrive your nave pillars so as to receive an arch to support the gallery front; and, lastly, do anything you please in the interior arrangements, to avoid that dead blank western end which is the result if you adopt the usual plan. In the exterior design, remember the remarks of Candidus; and think, before you copy York Minster, that the church you are designing could be passed, tower and all, through a single window of that building. Too many and too large projecting buttresses, when seen in the perspective, hide a great portion of the richest part of your work, and likewise create too many shadows. When I say this, I speak of small buildings, because the eye has not so far to range as in large buildings, where one unbroken space of light shall equal in extent the whole size of the smaller building. Consequently,



South Elevation.

it would be bad taste to introduce the like number of parts into each edifice; and it is evident that it is a mistaken notion in those who imagine that, if they observe the same laws, follow the same proportions, and have the like number of parts, that they gain the same effect in a small building as in a large one. In making choice of ornaments, never place embrasures, or other pierced battlements, against a wall. When your ornaments are chosen, place them in conspicuous situations about the building, rather than in clusters; and mind, after all, that you do not place a screen betwixt them and the eye of the spectator.

The accompanying designs for a church are made in accordance with what has been advanced; and, if effects and defects balance each other, nothing will be lost.

Fig. 132. is the ground plan. A A are porches leading to the entrances and staircases (B B); the body of the church being entered through the inner lobbies (C C); to which should be hung two pairs of folding doors, the inner doors of which should be glazed with stained or painted glass. The body of the church I should prefer fitting up with benches rather than close pews; not only on account of their being more in character with the style of architecture, but because it strikes me that they might

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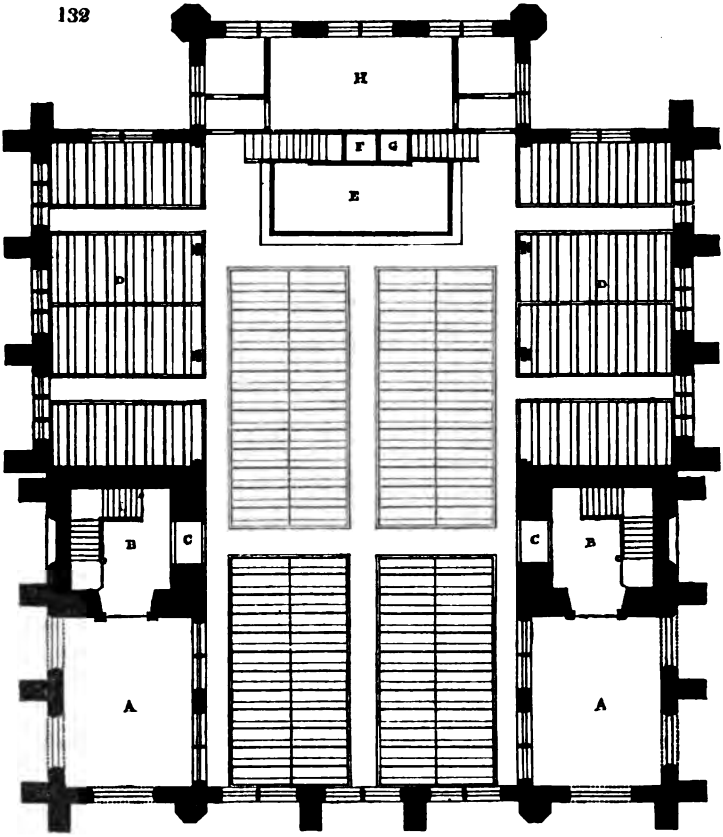

be made more comfortable. I cannot conceive why, in winter, they should send hot water up or down a pipe laid along the ailes, and then place a close framed wooden partition between the pipe and the congregation, unless it be to prevent the hot air from coming in contact with the people.

That portion of the church marked D D should be allotted for free sittings: E is the communion-table, placed in front of the pulpit (F) and the reading-desk (G), which should have paneled fronts, to receive a picture forming the background to the communion-table. The vestry and singers' seats (H) should be divided from the body of the church by a pierced screen, finished upon the same level with the gallery fronts; and above this screen should be a niche and canopy to the pulpit, designed as much as possible to improve the sound. Against the back wall, and elevated above the screen, should be some appropriate sculpture, carved in stone, which would receive a beautiful light from the two side windows. In the blank spaces over each entrance door should be placed stone tablets, with a figure or two introduced, for the purpose of bringing forward the sculpture at the east end of the church.

The galleries, of which it is unnecessary to make a plan, would extend over the free sittings (D D), with the fronts supported by Tudor arches, with pierced spandrils. Objections as to the extent of these galleries may be raised; but, if any person has made the observation, he will find (speaking generally) that the pews under the galleries have fewer tenants than any other portion of the church; and, though the person sitting there may hear and see as well as in any other part of the church, yet the absence of all architectural effect renders them the last place to which a person will resort, when any other situation is to be found; so that, in the proportion as these seats are tenantless, the advantages are lost, which otherwise would be gained by galleries; and for this reason do I think that it would be an advantage, in all churches, if they had only such an extent of gallery as would cover the free sittings.

Fig. 130. is the west elevation, *fig.* 131. the south elevation, and *fig.* 129. a perspective view.

The expenses, or cost, of the building would rather be below than above the general cost of churches; as the cubical contents of the two towers and porches will not exceed 50,000 ft.; whereas the extra size of one tower, and the two detached staircases, according to the usual plan, would contain 80,000 ft.; and, again, the windows, finished with crocketed label moulds, will cost no more than a window with mullions, branching out into tracery.

Sheffield, January, 1837.

ART. V. *Architectural Maxims.*

THOSE ornaments which have the semblance of use ought to be employed, before the architect ventures on such as are purely decorative. Hence, when facings to the windows of a building have been omitted, it is contrary to principle to decorate any part of the elevation with sculpture, or even columns or pilasters.

Where open work in parapets is introduced, avoid Grecian pilasters, unless the house be decidedly classical in style; Gothic work, unless the style of the house be decidedly Gothic; and Elizabethan or Italian work, unless the house be in either of these manners. Derive some form for the open work from the forms of the doors or windows, or of other openings prevalent in the elevation.

The forms and lines which characterise any building as a whole, should, as much as possible, be made to characterise all its separate parts. — R.

REVIEWS.

Art. I. *Thoughts on the Expedience of a better System of Control and Supervision over Buildings erected at the public Expense; and on the Subject of Rebuilding the Houses of Parliament.* By Lieutenant-Colonel the Hon. Sir Edward Cust. Pamph. 8vo, 20 pages.

The object of this pamphlet is to point out and illustrate the necessity of a sound system of supervision and control, with reference to the public architectural works of the country; for which purpose the reestablishment of the office of Surveyor-General is suggested.

"The office of Surveyor-General of Public Buildings has but recently been absolutely abolished. The duties formerly exercised, or supposed to have been exercised, by that officer have been transferred to the Office of Woods and Forests, now, I believe, designated, in consequence of this union, the Office of Woods and Works. He was, as the official title described, the officer who represented the public in all its dealings with architecture; but, being too well paid, at a time when little was to be done, the natural abuse ensued, that it was bestowed on unfit people, and latterly on interested ones; until it became necessary for parliament to interfere, and to effect a new arrangement. I hailed this reform at the time in my place in parliament; and, although then in habits of opposition to the government who effected it, I openly rejoiced, and approved of any change that I thought might produce amendment in practice. It is evident to me, however, that the remedy is not yet an effective one: men of business are not always men of taste; and the members of the Office of Woods have many other duties that deprive them of leisure to bestow on matters which may possibly also be foreign to their genius. I would therefore propose that they should be enabled to call to their counsels men whose abilities lay in the direction to which, with very great public usefulness in other business, their qualifications may not lead them. For this purpose I would suggest the reestablishment of the office of Surveyor-General, and the placing it in commission; the Commissioners of the Board of Woods and Forests to be *ex officio* members, and a certain number of persons, whose judgment in affairs of taste can be confided in, to be named by the crown to complete the commission; the First Commissioner of Woods and Forests to be the Chairman of the new Board, and to have the power of calling it into existence by his summons, whenever he may deem it necessary for the public service to do so. The only difficulty, and perhaps, at first sight, the *greatest* difficulty, is the proper remuneration for services which can scarcely be supposed to be 'within call' if entirely gratuitous; on the other hand, an overpaid office would again degenerate into the old abuse. I therefore recommend the adoption of a mode of payment long since practised by private Insurance Companies, that they only who attend the summons at the time specified should be paid, and that a certain fixed sum should be allotted for every such attendance. It is, I believe, a fact, which the history of the attendance on the business of Insurance Companies will corroborate, that men who would think it below their position in life to accept an office of one hundred a year, will exert themselves by regular and unremitting attention to earn by driblets no greater a sum, and will perform most useful and efficient duties when they attend; and there appears to me to be no objection to introduce the same system into the public service, even should it be found requisite to superinduce other checks than I have stated, in order to render such a system practically beneficial.

"Whatever may be the opinion of the proposition I have here thrown out, I trust the object of it will not be lost sight of, and it will illustrate the necessity of a sound system of supervision and control, if I refer to a few public works of recent completion; but, in order to avoid any invidious cavil with living architects, I will take my examples from the works of artists who can no longer be injured by my criticisms.

"For want of some presiding authority, what a heterogeneous compound of architectural taste did the late Houses of Parliament supply? No human ingenuity could have ever united James Wyatt's original Gothic and Sir John Soane's still more original Grecian. Why were they ever suffered to be so mixed together in the same building? Simply because these artists were left to their own uncontrolled discretion to carry out the full extent of their individual caprice, without any superintendence whatever. The expense of that building, if it could be sifted and brought to the knowledge of the public, would be found to have been enormous; as it must ever be when the Executive transfers the duties of supervision to men whose personal and professional interests are excited to carry out their own whims and caprices at the cost of another's purse. Take, again, the New Palace. I will not again allude to its taste; but why was it not rendered *a habitation?* It is well known that Mr. Nash was not restricted either in space or means; yet, because he was under no supervision, he threw away the advantages of both, leaving us this very bad consolation for the double expense imposed on the country, of first paying for a bad house, and then again paying for making it habitable: that Commissioners and Amateurs have had nothing to do with it, and that the dignity of art has not been compromised.

"The necessity of some more efficient superintendence over our public works would also appear desirable for the sake of the sister arts of our national school; and the great body of artists are therefore interested, for their own sakes, in desiring a better system of encouragement than what has ever been afforded them by the unrestricted discretion of their brethren of Architecture. When the opportunity has been afforded to any architect to give employment to the professors of Painting and Sculpture, these last have only enjoyed 'the crumbs that fall from the rich man's table;' and very small crumbs, I fear, they have hitherto proved to be. I am not aware that, in their extensive government employ, either Mr. James Wyatt or Sir J. Soane ever had recourse to the aid of painters or sculptors of eminence in their day to decorate their buildings. How far Mr. Nash has relieved himself from this censure in the works which he has introduced into the decorations of the New Palace, is a matter of opinion. That he never considered John Bull's pocket in the load of plaster he there embellished, and duly took his 5 per cent commission upon every employment he vouchsafed to give to his contemporaries, are the only facts that have survived for our satisfaction.

"In thus alluding to expenditure, I trust I shall not be supposed to be an advocate of that false economy, which has often been found to enlist public favour on its side from a misconception of its end and objects. It is against the *waste* of public money that I would enter my protest, and not against its liberal outlay; architectural propensities are not so ruinous in their consequences to a nation, as they are known to be to the purse of an individual. The material employed is comparatively of small value: it is the sweat of the poor man's brow, and the thews and sinews of the industrious mechanic, that shapes it to the various uses of civil embellishment and national convenience: for such objects as these the public purse ought never to be restricted, nor can they ever render a nation bankrupt (however the parallel might apply to the individual), because the Revenue must always feel the benefit of more extended employ, and a great part of the money expended in rearing a building is returned to the public treasury in various ways, before the key is turned upon it. But, when the money, liberally awarded by the Parliament, has been frittered away to gratify the caprices of interested individuals, without the ordinary check that is imposed upon even more exalted public functionaries, and without adding to the national credit or advantage, then it is high time for the public to consider it a grievance, and to demand a remedy."

On the subject of rebuilding the Houses of Parliament, the author proposes to consider,—

"1. Whether this delay has been the consequence of, or can fairly be attributed to, the course adopted by the successive governments to obtain a design for the New Building?

"2. Whether it would be desirable to pursue the same plan of proceeding at any future opportunity, when a project of public building shall require to be again considered?

"3. Whether every precaution has been taken to give the public the assurance of a good result in the plan selected, and about to be executed?"

With respect to the first question, the author decides against government, alleging that, instead of referring the consideration of the new building to the court architect of the day, it became the crown to take the initiative.

The second question is considered at greater length: —

"The objections that have been raised against the system adopted in determining the plan have been brought forward by two or three professional men. I am not aware that any voice was raised to disparage the composition of the Commission, until after the decision had been made public; it is not, therefore, an unfair inference, that the fault subsequently found with it should have arisen from private disappointment. The complaint, from whatever motive originating, may nevertheless be just. Two facts, therefore, may be recorded in justification of the appointments made: first, that ninety-six individuals were found voluntarily to expend (according to their own statement) 10,000*l.*, in full and entire confidence of the competency of the Commissioners to do them justice; and, secondly, that, notwithstanding the well-known diversity of opinion in which the public indulge in matters of taste, more unanimity was never displayed than on this occasion. The decision of the Commissioners was ratified by both the educated and uneducated classes; nor, during the public exhibition of all the designs, were any four people ever found *to agree* upon a better and more just selection.

"It has been urged, that mere amateurs could not by any possibility be qualified to give an opinion on the subject, unless colleagued with men of professional skill or science. This has been so happily controverted by able writers in the Quarterly, and other periodicals, that it is unnecessary to repeat the refutation; but it may be useful to remind professional men, that it is not the mere apprenticeship for any given number of years in an architect's office that can constitute a judge of architecture; correctness of eye is as much a natural gift as correctness of ear; and a just taste for what is great and beautiful will often be found to preside over Architecture, as it is known to do over poetry and music, by those who could as little compose a line or a bar as draw an elevation.

"It has been further objected, in unscrupulous terms, that amateurs are liable to be biassed in their judgment by partiality and favouritism; but this must ever as much attach to professional as to non-professional men, with this difference, however, in favour of the latter, that they cannot be swayed by the *jealousies* which rivals are apt to entertain. If, however, all men are under the same condemnation as to the *imputation* of favouritism, it may fairly be supposed that those whose situation of life renders them the least accessible to the advantages of any bias are the *most likely* to be free from it: moreover, the prejudices of professional men are often extended from individuals to the rival schools in which they have been educated; and this an amateur is necessarily free from. To these objections against the admission of professional Commissioners, which are, in my estimation, complete, I must add another, which is conclusive; that few architects would be found willing to compete if a professional brother was to be made the depositary of any little novelty or ingenuity which their talents had devised, and of which they would be most unwilling that another in their profession should take advantage. An example of this was shown in the petition of Mr. Cottingham to the House of Commons, who thought that the public exhibition of his design had furnished a hint to Mr. Barry, the successful competitor, in the revisal of his original plan.

"I cannot understand why jealousy should exist between 'those who work and those who play' at Art; the old proverb of 'Two of a trade,' &c., cannot apply, because no rivalry can exist between parties so situated: the artist must gain more by the mutual intercourse than the amateur; for, although one may gain increased knowledge, the other can not only glean a few seeds of information in the interchange of minds, but he may also turn it to profitable and advantageous account; and, in the words of my motto, I will add, 'If courts, noblemen, and philosophers do not understand art, neither painting, sculpture, or architecture can flourish.' It is time that the unworthy prejudice should cease amongst us, and that artists should look upon amateurs, not only as a body of men by whom they must principally live, but also as those who can have no other interests than the welfare and advantage of the really eminent, by the exposure and detection of the mere pretenders and quacks who occupy their places."

The third question comes next under consideration. In approaching it, Sir Edward Cust says: —

"It may be thought that it was a matter that deserved to be brought to the notice of Parliament before it voted the money for the building; but I have been deterred from this by the unjustifiable (in my opinion) exertions of those who were straining every nerve to deprive of the prize an honourable man, who had shared with them the chances of the struggle, and had fairly earned the victory; and I would not, in any way, aid the object of a few which I thought unfair and unjust towards the whole body of competitors, as well as Mr. Barry.

"The question I am about to consider is, 'Whether every precaution has been taken to secure to the public the assurance of a good result in the plan about to be adopted?' The obvious answer would be, that this is in the hands of the Executive, with whom, very properly, must rest the details to be adopted; and that it is not very much to be expected that an unofficial person like myself should know what system the proper departments of government *will* adopt, or, for all I can know, may have already adopted, to carry out the grant of the House of Commons. Of course, every man who volunteers an opinion upon any matter on which he can have no claim to be consulted, must labour under the disadvantage of ignorance of what is doing, and he must also make up his mind to the accusation of a certain amount of officiousness in the step he takes. I have but one motive in incurring the latter charge, which will, I hope, be deemed a sufficient exculpation in the eye of the public; viz. to aid the Executive in a task which, in universal estimation, has hitherto been performed in a very unsatisfactory manner; whatever, therefore, may be the estimation of any suggestions that I can make upon the subject, they cannot fail to be of more value when offered previous to the undertaking, than if presented to the public in the form of querulous criticism, when it is too late for the application of any remedy.

"As one of the Commissioners appointed by his late Majesty to select and classify the designs for the great national work of a new House of Parliament, I am desirous of placing upon record, that I consider my duties to have been concluded by the Report made by us to the King, and that the Commissioners are unentitled to any merit or demerit which may attach to Mr. Barry's design, beyond that of their judgment as to its superiority above its ninety-five competitors. In common with the public, I unequivocally admire its grandeur as a whole, and the beauty of its details; but I have never disguised my private opinion, that it is much too highly overwrought, and that a building less richly decorated, and consequently less expensive, would be better in accordance with the purposes of a House of Parliament, and better suited to the public purse. The north front of Westminster Hall, which it is very properly proposed to incorporate into the design, looks now so bald in the midst of the paneled and pinnacled architecture that surrounds it, that it would be my advice rather to *lower the tone* (if I may borrow such an expression from a sister art) of the new Building, to suit the old, than be exposed to the necessity hereafter of *colouring up* the old to make it accord with the new. I have that high opinion of Mr. Barry's abilities, that I am convinced he has only to be *required* to do this, or in any other way to exert his taste or discretion in an alteration demanding both those qualities, in order to make any designs of his admirable: but *who is to require this at his hands?* This is the old grievance; and the public interests have been hitherto sacrificed, when we have arrived at this step of our progress. The dignity of our British artists eschews all control; and, when one could evidence on his side the presumed opinion of a Committee of Parliament, he has become supreme arbiter of his own work; and from thenceforth John Bull has been only allowed the privilege of paying for any vagaries that he may have been pleased to graft upon the design which his 'collective wisdom' has been supposed to approve of. In the present case, I take the liberty of saying, without any fear of contradiction, that neither the Commissioners, nor the Committees of Parliament, nor the ordinary Executive Department of the Office of Woods and Works, have given any *consideration* to the details of Mr. Barry's design. Some competent judges have doubted the advisability of its extension towards Abingdon Street; and no one, I believe, but the architect himself, has considered the propriety of a step that will require the purchase of the east side of that street in nearly its whole length. Others have doubted the practicability, as well as expediency, of entering the lower story of the great tower with the state coach and horses, and believe that it would be essential for that purpose to take down a considerable portion of the other side of the same street. These are serious preliminary doubts, which obviously should not be lightly hazarded in print, without a strong conviction of their truth. The public, I am sure, will have to thank me for pointing them out, even if it should find that my assertions have been made in error; since it is of the first importance to know that some competent authority has determined alterations to be necessary and advisable before they have been undertaken; but (I would add) the grandiloquent authority of a Committee is not quite sufficient, unless somewhere recorded, for the possibility of a reference being made to it; since a great deal depends upon the extent of the sanction it is calculated to convey. It might be urged, indeed, that the consent of Parliament is obtained by its silence; and, moreover, that to alter what has been *settled* in the Committees would be to invite anew the petitions and discussions of the last years. But, surely, to concede this point, would be to place the opinions and wishes of the community at the mercy of two or three discontented men, and to make that silence, which is the mere indisposition of men to interfere in matters they do not pretend to understand, more influential than the advice of the best informed, and an effective clog on the exertions of the Executive to avail itself of every opportunity to improve the plan in the execution of it. I desire, then, to impress upon the public the necessity of requiring an efficient supervision over our public works from their commencement; and I would particularly appeal to them not to be led away by the absurd supposition that this control is improper and unfair upon the architect, when it is essentially necessary for our interests, and for that of the public purse, that the same check should be placed upon the public architect, and the needless waste of money, which has been the consequence of his irresponsibility, that is obtained by an individual in his private practice. It will naturally be supposed that this check exists already in the Office of Woods and Works. If Lord Duncannon, Sir Benjamin Stephenson, and Mr. Milne, will undertake to apply this salutary check, I have not another word to offer; but I desire to fix, by name, the responsibility of any disappointment which may hereafter accrue upon these three individuals, if no step should be taken to relieve them of this burthen. I may, notwithstanding, take the liberty of laying before the public a scheme of more efficient control than can be offered by *any* three men of whom the Office of Woods and Works might by any probability be composed."

ART. II. *The Civil Engineer and Architect's Journal.* Nos. I. and II., for Oct. and Nov. 4to. 6*d.*; or stamped, 7*d.* To be continued monthly.

THIS promises to be a very useful work, because it will cooperate with this Magazine in diffusing a more general knowledge of architecture and engineering among the reading classes of society. We presume, from the title, that the main object will be engineering, and that architecture will be comparatively secondary; but, be this as it may, we shall avoid publishing anything in the *Architectural Magazine* which has appeared in the *Civil Engineer*, in order that such of our readers as take in both works may not pay for the same thing twice over. Where information is obtained from a common source, such as published books, reports, newspapers, &c., the same matter will sometimes unavoidably appear in both periodicals; because, as both appear on the same day, it is impossible that either editor should know what will be contained in the other. Our idea is, that this mode of proceeding on our part, which will probably also be followed on that of the editor of the *Civil Engineer*, will be best both for the public and for the respective works.

The contents of No. I. of the *Civil Engineer* are, American Railways, p. 1. to 3.; Vicat on Mortars and Cements, p. 4. to 5.; Papers on Subjects connected with the Duties of the Corps of Royal Engineers, p. 6.; Notices of Godwin on Railways; Godwin's Chronological Epitome of the History of Architecture; Bennett's Original Geometrical Illustrations; Bardwell's Temples, Ancient and Modern; Donaldson's Review of the Life of Sir John Soane, in p. 7.; Address, Prospectus, and New Standing Orders of the House of Commons, in p. 8.; Present State of Architecture in England with respect to the Metropolis, in p. 9., being a sort of Reply to Welby Pugin; Hakewell on Classical Architecture, p. 10. and 11.; New Houses of Parliament; London Water Companies; Steam Navigation; Signals on Railways; Contractors' Grievances; Railways; Buildings and Public Improvements; List of Patents, p. 12. to 14.; Miscellanea and Advertisements, p. 15. and 16.

Art. III. *Minutes of Proceedings of the Institution of Civil Engineers; containing Abstracts of Papers and of Conversations, for the Session of* 1837. 8vo, 32 pages.

The publication, by scientific institutions, of minutes of their proceedings was first adopted, we believe, by the Zoological Society; and has been found of the greatest advantage, both to members of the Society, and the public, by giving a general and correct idea of what goes on at their meetings, and an anticipation of the papers which may be expected in their *Transactions*. The present is the first publication of this kind of the Institution of Civil Engineers, and it cannot but be considered as highly creditable to that body. We trust we shall be only seconding their views in giving large extracts from it; confining ourselves to those parts which chiefly concern architects. Those papers which more decidedly embrace engineering subjects, such as steam, railways, &c., we conclude will be in the hands of every civil engineer, as there are few gentlemen of this profession in the country who do not belong to the institution.

" *Jan.* 10. 1837. — *Cements.* Col. Pasley said, that his attention had been directed to the subject of Cements, from reading in Smeaton's works that all water limes were composed of carbonic acid and clay; since, on dissolving these limes in carbonic acid, clay, of which brick could be made, was left. From this remark he had been led to make experiments similar to the following:—He took *two* parts of chalk and *one* of clay. The chalk being pounded and mixed with the clay, balls were formed, which, being burnt in a crucible, were ground and mixed as cements usually are. Some of these experiments failed; but he attributed their failure to his having used clay which was coarse and sandy; whence it appears that substances will unite when in the form of a fine powder, which will not unite when in a coarser form. These experiments were made in the years 1829, 30, 31, and 32. Subsequently, in 1836, he repeated his more successful experiments, but without the same success; and he attributed their failure to the fact of the clay (the blue clay of the Medway) containing a greater proportion of carbonate of lime than it had contained five or six years before. Continuing his experiments, he found that 4 lb. of dry chalk and 5 lb. of the moist blue clay, fresh from the Medway, made the strongest cement; but he had determined many other proportions which set immediately under water. With cement made according to the above proportions, thirty-one bricks had been set out from a wall, one brick being added every day, omitting the Sundays.

" He had cemented bricks together; and he found in every case that the bricks gave way, and not the cement. He estimated the breaking force at the joints at about 5000 lb. on the thirty-six square inches, the surface of the brick. On comparing the strength of this cement with the chalk mortar which had united some bricks more than thirty years, he was led to consider the adhesive power of his artificial cement, forty days old, as at least twenty times the power of the mortar.

" *Jan.* 31.—*Cements.* Mr. H. H. Price called the attention of the Institution to the importance of ascertaining what are really the constituent elements of artificial hydraulic mortars and cements. Several memoirs have been read before the Institute of France on this subject; but they exhibit great discrepancies as to the principles of the formation of these cements. It is of the greatest importance to the engineer to know from the materials at hand how to make a cheap average hydraulic mortar.

" Col. Pasley remarked, that he considered Smeaton's Researches as the only ones of value. The French philosophers had followed out many of his suggestions in great detail. Two systems appear to have been pursued in France: the one in which the substances are burnt previously to their being mixed, the other in which they are mixed in a state of minute division previously to their being burnt. The Aberthaw limenstone used by Smeaton consisted of carbonate of lime and clay; *one* part of the lime from this stone, and *two* parts of sand, make a cement which sets very hard in time; but the joints must be protected at first by Sheppey, or some similar cement.

" Mr. Lowe was of opinion that very much must be attributed to the presence of silica: this evidently played a most important part. Limes have exceedingly different qualities, two makers using the same quarry would produce very different limes. If lime is flare-burnt, that is, burnt at a white heat, all the carbonic acid is driven off suddenly. The properties of lime burnt at a slow heat will differ much from the properties of the preceding. The mechanical mixing is, also, of the greatest importance. The Barrow lime is a natural hydraulic lime; but it must be well beaten with water and silica, or sand.

" *Feb.* 7. — *Cements.* The conversation on artificial cements being resumed, several members expressed their opinions on the causes to which the hardening of mortar was to be referred. Hydrate of lime is the basis of all mortars; but this will not make a water mortar, or cement, without the addition of a metallic oxide. The addition of clay will effect this; but most clays contain a metallic oxide.

" Mr. Francis Bramah gave the analysis of Dutch terras, of basalts, and of puzzolana, according to different experimenters: in all of these there is a considerable proportion of iron; and the addition of any of these to hydrate of lime will make a water mortar. Thus, it appears that we must carefully distinguish between a good mortar, and a good water mortar, or cement. Hydrate of lime is the basis of both. Good mortar depends, for its excellence, on the slow absorption of carbonic acid; and the slow absorption of this is, according to Tennant, the essential condition for good mortar. It is remarkable that, according to Pliny and Vitruvius, the Romans kept their mortar for three years; and it is now the custom among builders to bury mortar, or to keep it in a cellar: it is thus prevented from absorbing carbonic acid from the atmosphere, or, in other words, from being reconverted into limestone. According to some experiments of Tennant, it appears that mortar, in three years and a quarter, will regain 63 per cent of the carbonic acid of which it had been deprived. The absorption of carbonic acid being the condition of mortar hardening, if it be used under circumstances such that this absorption cannot take place, as under water, some other material must be supplied, and the addition of a metallic oxide appears to supply the required element.

" With respect to a hypothesis of Kirwan's, which had been mentioned, as to the peculiar properties of iron and clay, Mr. J. I. Hawkins stated a singular fact, which had come under his own observation; namely, that the rust of iron has a peculiar disposition to travel through moist clay: the rate of this transfer was, in one case, about one inch per month.

" *Jan.* 31.—*Boring Wells.* ' Description and Drawing of an Apparatus, designed by Mr. Mitchell, for boring Wells. By Mr. Mitchell, jun., of Sheerness.' This apparatus consists of a frame, similar to that of a pile engine, in which the rods are suspended. On one of the rods is a wheel, fixed on a square spindle (through which the rod can slide), and turned by means of a pinion and crank. The axis of this pinion serves, also, to draw the rods, since they may be drawn up by a single rope, or by a tackle suspended to the top of the frame, the rope of the block passing round the winch. The auger is regulated in the cut by a screw and nut; thus, the rods are always kept from bending in the hole, and the bore from getting out of the perpendicular. This apparatus is found peculiarly convenient in chalk, and when stones are met with; since, in most cases, if the auger be sufficiently hard, the stones flash off in small chips similar to gun flints.

" *Feb.* 28. — *A new Lewis.* ' A Drawing and Description of a new Lewis, by Henry Robertson, Glasgow.' Communicated by the Author. The proposed Lewis consists of two pieces of iron, whereof each is a bent lever, connected at a joint by a strong bolt. When the upper or longer arms are drawn together by the power, the under or shorter arms, inserted into the hole, are forced against the sides; and, by properly increasing the proportion of the upper to the under arm, any necessary power may be given to the instrument.

" The advantages of this Lewis, as compared with the one of three pieces, in general use, are, that it can be inserted into and removed from the hole in far less time; it adapts itself to the form of the hole, all fitting and plugging with slips of iron being unnecessary; and, exerting its pressure directly against the sides of the hole, is less apt to chip off the edges, and endanger the falling of the stone.

" *March* 7. — *Strength of Materials.* ' On Experiments on the Strength of Materials. By Thomas Webster, M.A.; Sec. Inst. C. E.' The object of this paper was to point out the importance, in making experiments on the strength of materials, of beginning with weights sufficiently small. In the series of experiments on the strength of various timbers by Lieut. Denison, laid before the last meeting of the Institution, the first weights are in some cases too large; for, from the commencement, the deflection increases more rapidly than the imposed weight.

" The points to be ascertained in all experiments of this kind are, first, the weight which a beam can bear, the elasticity being unimpaired, or the elastic weight; and, secondly, the breaking weight. So long as the deflection increases in exact proportion with the increase of the weight, we may consider that the elasticity is unimpaired; but, if the deflection increases in a higher ratio, that is, if the deflection for 1 cwt. be 1 in., and for 2 cwt. more than 2 in., we may suspect that some violence is done to the elastic force of the material. Thus, a guide is furnished us in our observations: the weight before which this ratio is observed to change must be considered as the elastic weight. When a beam is to be broken, the effect of time should be noticed, and the increased deflection after a given number of seconds recorded.

" The experiments of Lieut. Denison bear out these remarks; for it will be seen that the point at which he has noted the first permanent set is, in very many cases, immediately after the change which is here laid down as the condition for determining the elastic weight.

" With respect to the strength of materials, Mr. Cottam stated, that it had often occurred to him whether, if a beam be loaded by ever so small a quantity beyond the elastic weight, this beam would not in time be broken. This consideration might, he thought, explain some apparent difficulties; as when a beam breaks suddenly without any increase in the weight, but having been loaded to the same amount for many years.

" Mr. Hawkins mentioned a case, in which a beam that deflected too much had been sawn down its middle and bolted up, so that its depth was increased in the centre from 10 in. to 11 in. The effect of this was, that the deflection, instead of being about 1½ in., was only one eighth of an inch. Was this great increase of strength to be attributed to the increase of depth simply, or to the lower half having become a truss, and the upper a strutt?

" *March* 14.—*Decay of Timber.* The decay of timber in contact with stone was discussed; and several instances were mentioned in which the only decayed part of timber was that in contact with stone. This decay is entirely obviated by inserting the wood in an iron shoe, or by placing a thin piece of iron betwixt the wood and the stone. Several cases were mentioned, in which the iron shoe had been found a complete protection against dry rot and decay: a hard crust is formed on the timber in contact with the iron, which seems effectually to preserve it. It was suggested that the system of grouting must contribute to the early decay of timber: bond timber had consequently been replaced by bond iron. Bond timber is used very generally at Manchester, and answers exceedingly well; but the high temperature of the buildings may be a preventive against the decay of the timber, as the walls are very soon dried.

" *Strength of Materials.* The subject of the strength of materials was resumed from the last meeting, and especial reference was made to the experiments by Mr. Hodgkinson on the strength of iron girders, published in the Transactions of the Manchester Society. In this paper, Mr. Hodgkinson supposes the forces of extension and compression to have a ratio 1 : n; and not that, within the elastic limit at least, this ratio is a ratio of equality. Also, these experiments are directed especially to determining the form of beam which will be strongest up to the instant of fracture; or, in other words, the beam which will have the greatest breaking weight without any reference to the elastic weight.

These principles are contrary to those laid down by Tredgold, and to the opinions of many persons of great experience. Mr. Donkin and Mr. Francis Bramah maintained that within the elastic limit the forces of extension and compression are equal; that, consequently, within this limit the deflection will be the same, whether the beam is laid with a particular edge highest or lowest; that a beam, for instance, whose section is a triangle, will exhibit the same deflection within the elastic limit, whether the vertex or base of the triangle be laid uppermost; beyond this limit, however, the case is different.

" The strength of a beam, according to Mr. Hodgkinson's experiments, depends on the bottom flanche: by increasing this, he had made beams, for which the breaking weights were 4000 the square inch of surface of section; whereas Tredgold's strongest forms were about 2400 the square inch.

" *March 21.— Strength of Girders.* ' On the Strength of Iron Girders. By W. B. Bray, A. Inst. C.E.' In this paper, the author states the rules which had been given by Galileo, Tredgold, and Hodgkinson, for calculating the strength of iron girders. He shows by a table that Galileo's rule must be utterly false when applied to girders having large bottom flanches. Applying this rule to two girders, one of which contains double the metal of the other, they ought to be of the same strength; whereas Mr. Hodgkinson's rule makes the former only one half as strong as the latter. Tredgold gives no rule for the case of a large bottom flanche. Thus, there appears great inconsistency in these rules, and a formula applicable to all cases is still wanted.

" *Iron Girders.* ' On Mr. Hodgkinson's Experiments on Cast-Iron Girders. By Thomas Webster, M.A.; Sec. Inst. C.E.' The object of this paper was to detail the result of an examination of the above experiments, undertaken with the view of ascertaining whether those forms of beams recommended by Mr. Hodgkinson, as requiring greater breaking weight, have also a greater elastic weight than the more ordinary forms, with equal flanches at the top and bottom. The principle assumed by Tredgold (which, also, was the principle assumed by Dr. Young) is, that within the elastic limit the forces of extension and compression are equal; whereas Mr. Hodgkinson starts with the enquiry as to the law which connects the forces of extension and compression.

" Mr. Hodgkinson's experiments must be viewed as directed entirely to determining the breaking weights; and the earlier weights are not set down in many of the experiments. The weights and deflections first recorded are, in many cases, very near the elastic weight and point of permanent set; so that there is great difficulty in applying the principle already laid down for determining the elastic weight. But, in some of the experiments, which have a long series of early weights, it will be seen, on comparing the increase of deflection with the increase of weight, that this ratio changes from one of equality sooner in these forms than in those with equal flanches at the top and bottom.

If, then, these beams, with large bottom flanches do possess practical advantages, it may be from their allowing a violation of the elastic limit with comparative safety; this is a state of things, however, which ought never to be contemplated.

" *April* 4. — *Wooden Bearers.* 'Result of Experiments made with a view to determine the best Figure and Position for Wooden Bearers, so as to combine Lightness and Strength. By James Horne, F.R.S.; A. Inst. C.E.' The results of several experiments on wooden bearers of different sections are tabulated; together with the dimensions and weights of the pieces, and the nature of the fracture. The conclusion at which Mr. Horne arrives is, that a triangular prism, placed with its base upwards, is the strongest figure and position; that with an edge uppermost, the weakest for a given quantity of material.

" *Vibrations of the Soil.* The subject of the vibrations produced in the soil by the passage of locomotives and coaches was discussed; and several instances were mentioned, in which the vibration of the soil was sensible at the distance of a mile and a half during an observation by reflexion. It was stated that the experiments recently made for determining the effect which the passage of the locomotives at a small distance might have on the observations at the Royal Observatory had not been conclusive; but that, as no sensible effect could be produced on any observations but those by reflexion, no apprehension of inconvenience was entertained.

" It was also stated that a number of persons running down the hill in Greenwich Park produces a slight tremor, which is quite sensible during an observation by reflexion; and that the shutting of the outer gate of the Observatory throws an object completely out of the field of the telescope.

" *The Thames Tunnel.* 'Notice concerning the Thames Tunnel. By Richard Beamish, M. Inst. C.E.' Several attempts have been made, in former years, to effect a communication betwixt the opposite shores of the Thames by means of a tunnel; all of which, however, failed. In 1798, Dodd proposed a tunnel at Gravesend; and, in 1804, Chapman projected one at Rotherhithe; and, in 1807, Vazie commenced the construction of a shaft, 11 ft. diameter, at a distance of 315 ft. from the river. With Vazie was associated Trevethick, a man of great practical knowledge as a miner; and, by indefatigable labour, a drift-way, 5 ft. in height, 2 ft. 6 in. in breadth at the top, and 3 ft. at the bottom, was carried 1046 ft. under the river. In the spring of 1808, having first ascended from under a rocky stratum, though with a depth of at least 25 ft. betwixt them and the bed of the river, the Thames broke in upon them; and, not a single brick having been laid, the work was irretrievably lost.

" In 1823, the subject of a tunnel was again agitated, and a company was formed to carry into execution the plans of Mr. Brunel. The first proceeding was to sink a shaft. Twenty-four piles, with a shoulder on each, were first driven all round the circle intended for the shaft. One side of a wooden platform, or curb, was then laid on this shoulder, whilst the other side rested on an iron curb, having an edge below, to which it was attached. Through this curb ascended forty-eight wrought-iron bolts, 2 in. diameter, to the height of 40 ft., the height to which it was proposed to raise the shaft. The regular building of the tower on the curb, with bricks laid in cement, was proceeded with, and yet farther bound together by twenty-six circular hoops of timber, half an inch thick, as the brickwork was brought up. At the top of the tower was placed another curb; and, the long iron bolts passing through it having their ends formed into screws, the whole was screwed solidly into one mass, and completed in three weeks. In a week after it was finished, sixteen of the piles having been driven, two by two, opposite each other, the whole structure was sunk half an inch, carrying down with it the remaining eight piles, on which it was brought to a rest uniformly and horizontally, thus permitting the sixteen piles to be abstracted by opening the ground at the back. The whole weight supported by these eight piles was about 910 tons (the weight of the shaft). Having been left for three weeks to dry, and gravel having been heaped under the curb, the remaining eight piles were removed, two by two, till the mass rested on a bed of gravel. The machinery (viz. the thirty-horse high-pressure steam engine, with gear for raising the excavated soil) was now fixed on the top. The miners were placed inside, and, by excavating from around the bottom, the whole descended by its own gravity.

" Mr. Beamish then describes the peculiar difficulties which were experienced previous to the first irruption.

" The chasm in the bed of the river, formed by the irruption of 1827, was stopped by bags filled with clay, with hazel rods passed through them; and the interstices filled by gravel. The irruption of 1828 was met by similar means; but, the funds of the company not being then sufficient for proceeding with the work, the shield was blocked up with bricks and cement, and a wall, 4 ft. in thickness, was built within the tunnel.

" For seven years the work was abandoned; till, in 1835, a Treasury loan was granted, subject to the condition that the most dangerous part of the tunnel should be executed first. On resuming the works, the first object was to provide a drain for the water from the shield, for which purpose two reservoirs were formed under the middle pier, from which drifts were formed to the bottom of the great excavation and shield. The water was abstracted from the shield at the lowest point, and the pipes of two pumps, worked by the steam engine, being brought into the reservoir, all the difficulty of the drainage was overcome.

" The removal of the old, and the introduction of the new, shield was a work of no ordinary difficulty. The bricks and cement had, by the strong oxide of iron which the water contains, been converted into a mass harder than most rocks; and not less than 1646 of surface, 342 of which constituted the ceiling, had to be supported on the removal of the brick work previous to the introduction of the new shield. The means, however, adopted by Mr. Brunel, and which are described in the paper, were perfectly successful.

" *April* 11. — *The Thames Tunnel.* Mr. Brunel gave an account of the Thames Tunnel. Having described the nature and difficulties of the undertaking, and the previous attempts which had been made by others to effect a similar work, he explained, by reference to sections, the nature of the strata below the river. He had adopted the rectangular form of the present excavation, because the work would set better than if of any other form, and had a better sustaining surface. The necessity of supporting the ground, and of having a sufficient shelter, had led to the adoption of the shield, respecting which so much had been said. The construction of this would be understood by conceiving twelve books, set side by side on their ends. These would represent the parallel frames which, standing side by side, but not in immediate contact, fill up the excavation. Each frame is divided into three boxes, or cells, one above the other; the adjustment of the floors of which, and other details, were minutely described by Mr. Brunel.

" Each frame is furnished with two large slings, by which it may derive support from or assist in supporting its neighbours; it has also two legs, and is advanced, as it were, by short steps, having, for this purpose, an articulation which may be compared to that of the human body. The frame rests on one leg, and then one side is hitched a little forward; then, resting on the other leg, the other side is hitched a little; and so on. Hence, the shield may be called an ambulating coffer-dam, going horizontally.

" The brickwork is built in complete rings; and the advantages of this system of building had been fully proved by the fact of two dreadful irruptions having produced no disruption. Such was the violence of the irruption, that the brickwork had, in one part, been suddenly reduced in thickness by one half; and in one place there was a hole as if pierced by a cannon ball. At a few feet beneath them is a bed of quicksand, 50 ft. deep; and above them strata of most doubtful consistency, some of which goes to pieces immediately on being disturbed. Still, however, their progress is certain, and they only require patience to allow of the ground above them acquiring sufficient density. He found gravel, with a mixture of chalk or clay, extremely impervious to water: in some cases he contrived to let out the water from the sand above them, and thus obtained ground of sufficient density. In their progress they were considerably annoyed by land springs, which produced cutaneous eruptions, and destroyed the finger nails of the workmen.

" *April* 18. — *The Thames Tunnel.* Mr. Brunel gave farther explanations respecting the tunnel. He explained the way in which the ground above them had suddenly sunk down, owing to the run of a lower stratum of sand. This running sand, which was a very great annoyance, consisted of *five* parts water and *one* sand. Bags of clay and gravel are not best where there are many stones; for the interstices do not become properly filled up; but in these cases the coarsest river sand is best: the water runs through at first, but soon stops: gravel and clay mixed are nearly impervious to water, but not so impervious as gravel and pounded chalk.

" Mr. Gibb stated that he had found bags filled with clay and tow-waste exceedingly impervious to water. Being called upon to rebuild a sluice in a place where piling, owing to the stony nature of the ground, was impossible, he had formed a coffer dam, by laying down bags full of clay and tow-waste, in tiers of four, formed on the top of each other, to the surface of the water.

" The ventilation of the tunnel is effected by a pipe, 15 in. square, passing out under the fire-place of the steam-engine boiler.

four wheels by horses, the machinery being moved by the wheels of the car-

" *Levelling Machine.* ' Description of a proposed Levelling Machine, by John Harrison.' Mr. Harrison proposes to construct a machine which should make its own section of the country as it passes over it. This machine, of which the general appearance is like a caravan, is to be drawn on riage. A section is generally made by marking on the base line the lengths, and on perpendiculars through these points the heights, and joining the points so marked off; but in this machine the section is to be made by the continued motion of a point acted on by two forces, one of which would carry it in a horizontal line, uniformly with the space gone over by the machine, and the other vertically, according as the machine is rising or falling. The machine is thus divided into two distinct parts for effecting these purposes, and the way in which this may be practically effected is described in detail by reference to an isometrical drawing accompanying the paper.

" *April* 25. — *Chester Bridge.* Mr. Trubshaw presented to the Institution a model of the centre employed by him in the construction of the Chester bridge

" The peculiar features of this centre, which is described in detail in the first volume of the Transactions, consists in the absence of horizontal timbers, the timbers being so arranged that their load is received endways, and in the lagging being supported over each rib by a pair of folding wedges.

" Mr. Trubshaw entered into the details of the construction and method of striking the centre, explanatory of the account contained in the Transactions.

" *May* 2. — *Projecting Country.* Some remarks were made on the various methods which had been employed for representing the nature of a country as to levels and slopes. In one map of Warsaw the level of every point was shown; in the ordnance maps of France, the heights of most principal points above the level of the sea are noted. With respect to slopes, different degrees of shading might be used advantageously for mountain ground, the gentle inclinations being lightly, and the steep places deeply, shaded. In some Prussian maps, they had represented mountain ground by circular lines at assigned distances; the lines being very near for considerable slopes. An objection to this plan is that an engraver aims at a degree of accuracy which he can rarely arrive at: he cannot easily possess sufficient data to put the lines all round a mountain with any tolerable degree of accuracy.

" *Stone-planing Machine.* Mr. Carneghie, in reply to a question from the president, stated that the stone-planing machine had not answered for sharp sandstone; but by endeavouring to imitate the mason's tool, and making the machine work in the same manner as the mason, they had succeeded completely. This tool was a comb with teeth; and, curiously enough, he had found at Dresden a tool, which had been in use from time immemorial, exactly similar to that which they had adopted.

" *May* 30.—*Warming and Ventilating.* On Warming and Ventilating, by J. Horne, F.R.S.; A. Inst. C.E. In this paper the author describes a method of warming and ventilating, on the principle of spontaneous ventilation, by means of an iron stove, care being taken that the *quality* of the air is not affected by the iron plates exceeding a certain temperature; and mentions a successful attempt to warm and ventilate a chapel on the same plan.

" Mr. Horne gives, also, an account of a method which he had adopted to ventilate an extensive drift or level, by forcing in air. The machine, a drawing of which, with all the details and dimensions, is annexed, consists of an upper cylinder, inverted, and working in a lower cylinder, nearly full of water. An attempt was at first made to ventilate by drawing out the foul air; this, however, did not succeed. The level is 7 ft. high, and 4 ft. 6 in. wide, and driven a mile before a rise into an upper level: the rise was then put up 400 ft. in height: both level and rise were ventilated successfully by this apparatus. The diameter of the ventilating pipe was 5 in., its length a mile. This showed most satisfactorily, that ventilation could be effected by forcing in air through a great length of pipe.

" *June* 6.—*Ventilation.* The subject of forcing air through pipes and of ventilation being resumed, Mr. Cottam stated a case in which a circular blowing machine, having a straight pipe 10 ft. in length and 6 in. in diameter, was sufficient to supply three furnaces, but that a single elbow rendered it incapable of supplying one.

" Mr. Oldham of the Bank of England stated that, in all the attempts which he had made to effect any purpose, he always endeavoured to imitate nature. Now nature supplies a large quantity of air slowly heated. He had consequently established a stove with a very large heating surface, and a pump capable of delivering 50 cubic feet per stroke. To get rid of the foul air he made large openings in the roof, and took care that there should be an abundant supply of air properly heated. The air is brought in at a temperature of 180° F.; thus there is a rapid change of air; and a summer heat is obtained without any sense of oppression. The success which had attended this system, during two frightful seasons of typhus and cholera in Dublin, would be attested by many medical men: in the middle of winter he kept the doors and windows open, and threw in abundance of warm air.

" *June* 13.— *Ventilation.* Mr. Oldham resumed the account of his system of warming and ventilating, and exhibited a model of his stove for heating the air. He was convinced that the expedient of forcing the air by mechanical means must be resorted to. He had raised the temperature of a room 24° F. in one hour: by spontaneous ventilation he could never obtain a temperature of more than 100° F.; but by pumping in the warm air he readily obtained a temperature of 150° F., or 180° F.

" *May* 30.— *Friction of Air in Pipes.* Some conversation took place on the power expended in producing this ventilation, and on the friction of air forced through pipes; and reference was made to several cases, which seemed to show that air could not be forced with effect through a great length of pipe, as for the purpose of blowing blast furnaces, whereas some experiments seemed to show that air could be forced through small pipes of 50, 100, or 150, in length, with the same velocity, under a given pressure.

" Mr. G. H. Palmer stated that, if 100 cubic feet of air could be forced through a small hole, under a pressure of *one* inch of water, in a given time, only 25 cubic feet would be delivered, under the same pressure, through a pipe of 1000 ft. in length, in the same time.

" Mr. Hawkins stated that, in the old Thames tunnel, a 2-in. pipe had been found quite insufficient for ventilation at a distance of 400 ft., but that a 3-in.

from the same bellows, and under the same pressure, had been quite sufficient. In the former case it was suggested, that the friction of the pipe was nearly the same as the pressure in the bellows, so that the air was simply condensed.

" Several other instances and experiments were quoted, and it appears that we must often consider whether the condensation has had time to take effect. The air may be condensed rapidly and none forced out, but, if the operation, takes place slowly, the condensation will have time to take effect.

" *June* 13. —*Voussoirs of an Elliptic Arch.* 'A practical Method of forming the Stones of an Elliptic Arch; by William Bald, Civil Engineer, F.R.S.E., M.R.I.A.' In presenting this paper to the Institution, the author has no object in view but to leave a record of the proceedings of an operation successfully carried into execution more than 17 years ago. This consists in the application of the well-known property of the elliptic, 'that the lines from the foci make equal angles with the tangent at any point.' The moulds are thus traced out by drawing a few straight lines.

" This plan was adopted in the construction of a bridge over the Owen-More river, in the west of Ireland; and a model of the two courses of the cutwaters of this bridge was presented to the Institution. In these courses the stones are cut so as to break joint with each other, and the blocks are connected together into one course, after the manner so ingeniously devised in the construction of the Eddystone."

Art. IV. *A practical and scientific Treatise on calcareous Mortars and Cements, artificial and natural; containing Directions for ascertaining the Quality of the different Ingredients, for preparing them for Use, and for combining them together in the most advantageous Manner; with a theoretical Investigation of their Properties and Modes of Action. The whole founded upon an extensive Series of original Experiments, with Examples of their practical Application on a large Scale.* By L. J. Vicat, Engineer in Chief of Bridges and Roads, formerly Pupil of the " E'cole Polytechnique," Member of the Legion of Honour, &c. *Translated, with the Addition of Explanatory Notes, embracing Remarks upon the Results of various new Experiments,* by Captain J. T. Smith, Madras Engineers, F.R.S., Associate Member of the Engineers' Civil Institution, late President of the Edinburgh Philosophical Society. 8vo, 302 pages, 3 plates.

Since the publication of Dr. Higgins on *Cements and Limes*, no English work on the subject has appeared; and, therefore, the present one, by the French engineer Vicat, and the English engineer Smith, will be received with satisfaction by that portion of the public to whom such works are interesting. The merits of M. Vicat's researches into the composition of mortars and cements are well known; and, though his work was published in 1818, it has not before received an English dress. How this happened to be given to it by Mr. Smith will best appear in his own words : —

" Having been occupied for many years in the construction and repairs of numerous public buildings, the charge of which devolved upon me in the performance of staff duties, I was long embarrassed in the endeavour to give durability to works executed under my superintendence, by many difficulties arising from the defective qualities of the cements employed, the dampness of the situation, and other causes, at the time unknown. Anxious to remedy these evils, I engaged in a series of experiments, in which numerous modifications of the processes previously employed, and every suggestion which could be gleaned from the scattered hints contained in the writings of the various English authors, who have incidentally touched on the subject, were put to trial; both with reference to the durability of the compounds, as well as their economy on the large scale. But, although these endeavours were followed by many promising results, it was not until I became possessed of M. Vicat's work that the theory of the composition of mortars and cements was developed in a sufficiently satisfactory and comprehensive manner to enable me to take a full view of the varied resources, found within the limits of almost every locality, for the fulfilment of the objects of which I was in search. But, systematic and plain as M. Vicat's instructions and experiments are when well understood, yet it is not without much labour, in repeating many of the experiments, and the perusal of other French authors on the same subject, that I was enabled to overcome the difficulties occasioned by my imperfect acquaintance with the exact meaning of the numerous technical terms employed in it, and fully to appreciate the originality and appropriateness of the experiments, and the depth and philosophical accuracy of the reasoning founded on them. Having surmounted these obstacles, and felt the great value of the copious information placed at my disposal, I could not look back upon the pains which it had cost me to effect my object, without being led to consider, that others, similarly situated with myself, might have the same impediments to contend with; and that I might assist future enquirers by placing the labours of M. Vicat within the reach of those who might possess sufficient leisure to give that attention to his work which I had found to be indispensable." (p. vi.)

The chapters are, 1. Of Limestones; 2. Calcination of Limestone; 3. Artificial Hydraulic Limes; 4. Slacking of Lime; 5. Hydrates of Lime; 6. to 9. Various Ingredients which unite with Lime in the Preparation of Calcareous Mortars and Cements; 10. to 16. Combination of the Elements of various Mortars and Cements. These chapters occupy 140 pages; and the remainder of the work, which extends to 256 pages, exclusive of the Index, is occupied with Capt. Smith's notes on M. Vicat's chapters. These notes add greatly to the value of the work; of which it is almost needless to say, that it ought to be in the possession of every architect, builder, and engineer.

Art. V. *Le Keux's Memorials of Cambridge; a Series of Views of the Colleges, Halls, Churches, and other public Buildings, of the University and Town of Cambridge, engraved by J. Le Keux from original Drawings, made expressly for the Work; with historical and descriptive Accounts of the Buildings, &c.* By Thomas Wright, M.A., of Trinity College, Cambridge, and English Correspondent of the Historical Commission appointed by the Government of France. No. I. 8vo. To be completed in 48 monthly Numbers, at 1*s.*; or in 4to, 2*s.*; or with first impressions on India paper, 3*s.*

This is the commencement of a work which cannot fail to be interesting, not only to architects and antiquarians, but to every one who has either been educated himself, or has had any of his children educated, at the university of which it treats. The engravings in the present number are two exquisitely beautiful views: the one the Library of Trinity College, and the other the Great Court, Trinity College. Besides these, there are two vignettes, on wood. The letterpress is one sheet. The work well deserves, and undoubtedly will obtain, success.

ART. VI. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

DRAKE's Roadbook of the Grand Junction Railway, from Birmingham to Liverpool and Manchester. Containing a brief historical and topographical Account of the Scenery, Places, and Objects on either Side of the Line (as observed by the passing Traveller in their Order of Appearance); the Rules, Regulations, Fares, Times of Outset and Arrival of the Trains at the various Stations; and an accurately engraved Map of the whole Route. Together with an Appendix, containing all requisite Information for Travellers arriving at the various Stations. Small 8vo, 184 pages. Price 2s.

Original Geometrical Illustrations. By John Bennett, Engineer.

Appendix to Elements of Architectural Criticism. By Joseph Gwilt.

ART. VII. *Literary Notices.*

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Remarks on Capt. Alderson's Report on the various Lines of Railway to Brighton. 1*s.*

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Pompey's Pillar. — In a letter of Captain Smyth's, who made the survey of the Mediterranean shores, we find the following dimensions of Pompey's Pillar, contained in a work recently published, entitled *Voyages up the Mediterranean, with Memoirs compiled from the Logs and Letters of a Midshipman* (Mr. W. Robinson)." While we were at Alexandria," says Captain Smyth, "I wished to make some observations with a theodolite from the summit of Pompey's Pillar; and, as there are so many accounts of its dimensions, I determined to have the exact measurement. With a kite, we conducted over a small line: this pulled over a larger; and so on, till we got a regular set of shrouds rigged; and we rattled them with oars and handspikes. I now send you a copy of the dimensions, the first as obtained by a micrometric instrument, and the second by a very careful measurement with a line and rule, so that we may now say that we have the true size of this noble relic of antiquity."

MICROMETER.

	Ft.	in.		Ft.	in.
The Capital - -	9	10	Summit to the astragal	10	4¾
Shaft - -	67	8¾	Astragal to the torus -	67	8
Base - -	5	10½	Torus to the ground -	21	4
Pedestal - -	14	11			
Whole height -	98	4¼	Whole height -	99	4¾

	Ft.	in.		Ft.	in.
Upper circumference	24	2	Pedestal square -	14	5½
Central ditto - -	27	1¾	Capital square -	11	9
Lower ditto - -	27	7½	Ditto diagonal -	16	10½

From these dimensions, the lower diameter appears to equal 8 ft. 9·252 in.; and the upper diameter, 7 ft. 8·304 in.; and, from the circumference at the centre, the diminution of the shaft seems to commence from the base, instead of at one third the height of the shaft, as is usual. — *M. I. B. A. London, Oct.* 1837.

Wages of Workmen. — At the late meeting of the British Association, several gentlemen expressed their regret that a better understanding did not prevail between the masters and the men; and certain societies, established in some of the manufacturing districts of France, for the consideration of matters relating to trade (consisting of six of the masters, six of the men, the chairman being a master), were mentioned as worthy of imitation in this country. Several instances were mentioned in which extensive mischief had been done, both to places and individuals, by these turn-outs; especially the removal of Mr. Heathcote's bobbin-net manufactory into Devonshire, whereby 2,000 hands were thrown out of employment in the district from which he removed. Mr. Merritt mentioned the turn-out at Liverpool, four years ago, of all the workmen conected with the building trades, estimated at 16,000 in number. The objects they proposed to themselves were principally three: first, to put an end to building by contract; secondly, to obtain the same wages for a smaller quantity of work; and, thirdly, to include all workmen in the union; in all which objects they signally and completely failed. Several other striking facts were mentioned, all tending to show, that in every struggle of this kind the men have always been ultimately defeated.

Ruthven's Improvement on Iron Rails for Railroads. — Mr. Ruthven of Edinburgh has bestowed much time and labour in contriving a form of a rail which, he thinks, will be found to possess material advantages over the wrought-iron rails now in use. The subjoined figures represent a section of the rail (*fig.* 136. *a*) and the chair (*b*).

The rail (*a*) consists of a tube of cast-iron, about 4 or 5 inches in diameter, and thicker below than above. At top it extends upwards, leaving a flat surface (*c*) for the wheel of the carriage. It is formed in lengths of 9 feet or more, and has a chair, marked by the dotted line *d d*, cast on it at the middle, and, of course, immovable. The chair for joining the ends of two rails is of the form *b*. Its curved interior exceeds a semicircle; so that it embraces and retains the rails without any pins.

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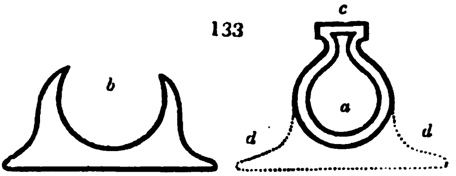

The advantages of this invention, in Mr. Ruthven's opinion, are the following: —

1. The hollow rail (the bottom of which, it must be remembered, is one half thicker than the sides and top) is much stronger than a solid rail of the same weight and materials. 2. The tubular form is a security against its bending laterally outwards or inwards. 3. The joined ends, being embraced within the chair, are more effectually secured from springing up than in the usual way, by pins; while the rail is prevented from rolling in its seat by the fixed chair *d d*. 4. The longitudinal contraction or expansion of the rails, by variations of temperature, is provided for by the absence of the pins, without producing any looseness. 5. He thinks cast iron might be employed in this way for rails, instead of malleable, with a great saving of expense; and it is allowed, we believe, that, except for its frangibility, cast iron is the preferable material. The form, however, is quite consistent with the use of wrought iron. He has had some lengths of the rails cast; and he has found by experiment that a yard of it, weighing 48 lb., placed with its two ends on rests, supports a weight of more than ten tons.

We think there is merit enough in these rails to deserve a trial, which could be easily made by laying a space of 20 yards with them, in some of the existing railways, where locomotive engines are used.

We mentioned, some time ago, that Mr. Ruthven was erecting one of Avery's engines (an American invention), which works by the reaction of steam, without beam, crank, piston, or valve. It is now ready, and will be at work in his own premises as soon as the masonry and external parts are completed. (*Scotsman*, Aug. 26. 1837.)

The following account of Mr. Ruthven's rail has been addressed by himself to the editor of the *Scotsman;* that intelligent and scientific gentleman having, with his usual attention to every description of improvement, given the notice of it which we have just quoted.

" Having for many years devoted much attention to this important subject, it may be considered as the result of well-matured investigation; and, although it may surprise many that there should be any difficulty in deciding on the best *form* of rail that can be adopted, after the experience had in the various railways established both in Europe and America, yet it appears that much misconception in regard to the proper *form* is still entertained. For instance, the rails on the Liverpool and Manchester Railway, without being greatly varied in form, have been changed in weight from 35 lb. to 75 lb. a yard. The expense attending such a change need not be stated: this and many others are proof how far the strength and weight of rail has been considered necessary more than the form.

" It has been supposed that a proper knowledge of the strength of iron was generally known, and that nothing more was required but to increase the weight of rails, and the desired object would be attained. It may be demonstrated, however, that *form* is equally important as weight. All admit that a tube is much stronger than the same quantity of material in a solid body. It may also be supposed to be admitted that the rails give resistance to the carriages, or weight on them, by the tension of the metal on the under side, and compression on the upper. Many interesting experiments have been made to ascertain the relative strength of rails, and compare one kind of iron with another; but this has been done more to ascertain the proportional strength in the difference in the weight of material, than in the variety of form; for a given weight of material appears hitherto to have been more considered than the form.

" I shall now, therefore, call your attention, and those connected with this national improvement, to the interesting fact, published in your paper of the 16th inst., as having been stated at the recent meeting of the British Association in Liverpool, by Messrs. Fairbairn and Hodgkinson; viz., ' The next experiment was on castings of a T form, or resembling railway rails, which were broken with the flange both upwards and downwards. In the first experiment, with the flange downwards ⊥, the bar of cold blast iron bore a weight of 1050 lb. They then reversed the bar's position, putting the rib downwards T, and the bar broke with a weight of only 266 lb.; so that there was a great difference, and this was of great importance in reference to the *shape* of *rails*, beams, &c., for bearing heavy weights.' This is certainly too important to be passed over without particular notice, and is the point to which I wish to call attention. The rail proposed by me is tubular; and, being laid horizontal, increased strength is gained by increase of thickness on the under side of the tube, producing similar effect to the above ⊥ bar, which in this position made a difference of strength in the ratio of 1050 to 266 over the former T. But the improvement in strength is made greatly more than the ⊥ form, by continuing the flange, until it meet the bar at the upper side on which the wheels run, as shown in *fig.* 134.; for a rail weighing 48 lb., in this form, is able to sustain, without fracture, a pressure of upwards of ten tons bearing on the centre of it. By this circular or tubular form, in addition to general strength, the rail is secured against *side deflection*, which takes place in the rail at present in use, destroying the power employed, and the rail itself to a great extent, and is generally the cause of a carriage running off the railway.

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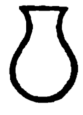

" This, then, may be considered as two important objects gained; that of strength with less materials, and avoiding deflection both vertical and horizontal. The chair at the joinings is the next point to call attention to. The hollow rail being circular, the chair is formed to embrace more than a half of the tube, as illustrated by the diagram given in your paper of the 26th ult., which most effectually secures the rail from rising, or, indeed, every motion (except expansion or contraction), merely by the *form*, which supersedes the necessity of locking or keying as hitherto, and avoiding the disagreeable shake in passing over the joinings of the rails; this, therefore, may be stated as a third improvement; as a fourth, the saving of expense, which will be found, *cæteris paribus*, to be greatly less than those at present in use. I have it not in my power to make these rails on a great scale; but I have some yards ready to exhibit to the public, and shall be happy to give every information desired to those who may consider it deserving their attention. — I am, Sir, &c." (*John Ruthven*, in *Scotsman*, Sept. 23. 1837.)

ART. II. *Foreign Notices.*

FRANCE.

MONUMENT to Joachim Murat.—The Council-General of the department de Lot has just voted 5000 francs towards erecting a monument at Cahors to the memory of King Joachim Murat, who was a native of that district. Subscriptions have also been opened for the purpose. Madame Murat, now Countess de Lipano, has presented the department with Gerard's portrait of her husband. (*Paris Paper.*)

The Antiquarian Commission for the Côte d'Or have been continuing their excavations at the ruins of Alize, in the arrondissement of Semur, and have recovered specimens of the arts, which already form a valuable collection in the Museum of Dijon. They have also made some researches near the sources of the Seine, and have discovered traces of an ancient temple, supported by columns in the purest style, and ornamented in the interior with rich marbles. Fragments of capitals and mosaics of porphyry and bronze, as well as numerous Roman medals, have been brought to light; and, as these works are continued, the existence of a grand monument, which, according to tradition, was erected by the Romans on this spot, will be probably established. (*Paris Paper.*)

GERMANY.

Eye-shaped Windows. — The peculiarity of this place, and one which kept us laughing at the recollection for nearly a mile after we left it, was the windows in the roofs of the houses. They are shaped exactly like eyes: the tiles swell up gradually like a lid above and below, elongating towards the end; and in the oval space between these twinkles the little bright window pane, just in the place of the pupil. It was, in fact, as exact a model of the human eye as could be made out of such materials. I never saw any thing so funny. The whole village had an *éveillé* Argus-like look, that was irresistibly droll; all the houses laughing, and blinking, and peeping at us as we drove in. The shape being long, and the lower lid rather straight, gave them a sly, sleepy, half closed expression, and, withal, a look of fun and merriment, as if the house were "holding its sides" with laughter. Sometimes we came to a great Cyclops building, with its one staring optic in the middle of the roof; and then appeared a comical intelligent-looking thing, with a pair, that twinkled and screwed themselves up at us as we passed, in the most provoking and impertinent manner possible. It was really too bad. (*A Lady's Souvenirs of a Tour in Germany.*)

The Glyptotheca at Munich. — A book recently published, called the *Spas of Germany*, by Dr. Granville, F.R.S., contains an admirable account of that magnificent building, the Glyptotheca at Munich; and, being accompanied by a plan and elevation, is well worth the attention of architects. The doctor appears to be an amateur architect, and some of his observations are sensible and judicious. He touches at some length upon the new Houses of Parliament; and I, for one, most cordially agree with the opinion he expresses as to a change of the style to be adopted in these buildings. I would infinitely prefer an edifice rivalling the glories of ancient Greece or Roman architecture, to the perpetuation of a style which is the representative of a dark and ignorant age; and which is, besides, ill adapted for the purpose. Although I am convinced that the works could not have been entrusted to an abler man than Mr. Barry, yet I cannot but regret, as many others do, that his genius has been restricted to one particular style. Could not our legislators be induced to pause ere it be too late, and rescind their Gothic decree? Should this be the case, I believe, as Mr. Hamilton, in his able *Letter to the Earl of Elgin*, says, that Mr. Barry's "well-known abilities, and his own purer taste, will readily and heartily respond to the instruction: all the Gothic barbarities will vanish with a stroke of the pen; buttresses will be instantly transformed into columns or pilasters, pinnacles into capitals, and towers into pediments; the windows will expand, and assume their proper proportions; armorial bearings and heraldic symbols will give way to more appropriate historical decorations; and, as the Roman public applauded when Michael Angelo transformed the sharp and angular projections and broken members, and other trifling, half Roman, half Gothic, impertinences of San Gallo's model of St. Peter's, with a diminution of expense too, into a style which combined the correct forms of the antique with the elegance and beauty of the more modern principles, which he had already brought into vogue amongst men of judgment, we shall hail the exchange of light for darkness, of truth for illusion, of majestic simplicity for cumbrous ornament, and of reason for licentiousness." Now that the noble architecture of Greece is beginning to be fully understood and duly appreciated, it will indeed be a reproach to us if, neglecting so fine an opportunity for its display, we tacitly confess ourselves unequal to the task of producing a building superior to those erected by our rude and uneducated forefathers. — *G. B. W. London, Oct.* 9. 1837.

BELGIUM.

Town Embellishment Society. — A company has just been formed under the name of "Civil Society for the Enlargement and Embellishment of the Capital of Belgium." The object of this new company is to build new quarters within or without the city of Brussels, particularly a quarter between the Louvain and Namur gates, to be called the Quarter Leopold. The capital of the company is five millions. The affairs of the Society to be managed by seven directors, without salary, and a secretary. This Company is formed between the General Society, the Society of Commerce, the National Society, and another society. (*Morn. Chron.*, Oct. 20.)

Madame Malibran's Monument at Brussels. — The design of the above monument has been at length decided upon. It is to be in form of a rectangular chapel, with a cupola, surmounted by a cross. A splendid white marble figure of the celebrated *cantatrice*, in her favourite character of Norma, will be placed in the interior, which will be lighted by a lamp from the dome. The figure will be perceived to great advantage through the fretwork of the intervening spaces; and the whole, when completed, will form one of the most interesting embellishments to the capital. (*Morning Chronicle*, Sept. 20. 1837.)

SPAIN.

Spanish Architecture. — Don Manuel de Godoy, Prince of Peace, in his *Memoirs*, vol. ii. p. 207., mentions the names of the following Spanish architects of his period: — Don Ventura Rodriguez, Don Francisco Sabatini, Villanueva, Arnal, Lopez, Freyre, Don Francisco Martinez de la Torre, Don Joseph Asensio, and Quintilian. He mentions, also, that Don Joseph Ortiz de Zanz, librarian to the king, was commissioned to make a translation of the works of Andrea Palladio, to which he added some useful commentaries; and (at p. 241.) that Don Joseph Castañeda executed a translation of the *Abridgment of Vitruvius*, by Perrault. So little is known of Spanish architects or architecture, that we should be glad to avail ourselves of any authentic information on the subject. The recent work of Roberts, which contains such beautiful views of many of the splendid edifices of that country, is sufficient to excite our curiosity. It is true, that Spain has been generally indebted to Italy for her architects; but there have been many native artists whose works are not devoid of much merit, although they may not equal in purity the more classic models of the Palladian school. Still, there is richness and originality of design in many Spanish edifices; and we would fain be more intimately acquainted with the history of this portion of European architecture. Mr. Owen Jones has made another journey to the Alhambra; and is possibly there now, with the view to complete his studies of the Moorish architecture and peculiar style of coloured embellishments, to which those extraordinary edifices owe so much of their attraction. We trust that he will return with a rich harvest of materials, and meet with that encouragement which one deserves who, at so considerable a risk, and with so much study and perseverance, has undertaken to illustrate this remarkable style of architecture. — *M. I. B. A. London, Oct.* 1837.

RUSSIA.

St. Petersburg, Oct. 7. 1837. — The first public trial of the iron railroad to Zarskoji Selo was made to-day. It is five versts in length, and begins in the midst of the city, near the church and parade of the Seminow regiment of the guards. The price of 2½ rubles for seats in the first and second carriages is considered to be much too high for such a distance. (*Newsp.*)

A Gas Company is at present laying down pipes at St. Petersburg; so that in the course of the present autumn, a part of the city will already be lighted with gas. A second company has likewise been formed there, to supply the shops with portable gas. (*Morning Post*, Sept. 13. 1837.)

Art. III. *Domestic Notices.*

ENGLAND.

The London Water Companies. — Our readers will recollect that, a few years ago (see *Architectural Magazine*, vol. iii. p. 365.), much was said in the newspapers, and in the reports by Mr. Telford and others laid before Parliament, respecting the impurities of the Thames water, as supplied by the water companies to the inhabitants of the metropolis. It appears that an attempt is now making by the three grand companies, which received their water from the Thames, to remedy the evil, by lifting the water into immense basins, there to deposit its mechanical impurities, before being conveyed to the supply reservoirs in the immediate vicinity of the metropolis. The Grand Junction Company are seeking for purer water further up the river, and forming their reservoir at the east entrance of Brentford, upwards of 6½ miles from their reservoir at Paddington. The cast-iron pipes which communicate between the two reservoirs are 2 ft. 6 in. in diameter within, and 1 in. thick. They are in length between 8 ft. and 9 ft.; and the joints, which are of the spigot and fauset kind, will require about 1 cwt. of lead each. The total expense is estimated at 8*l.* per yard. The engines for lifting the water out of the Thames into the reservoirs, and for forcing it along the cast-iron pipes, have a power equal to that of 500 horses. Contrary to what might have been expected, the level of the reservoir at Paddington is about 86 ft. above the works at Brentford. The West Middlesex Company are forming a similar reservoir on the Surrey side of the Thames, opposite their present engine in Hammersmith parish, the water from which will cross the river, and be forced along to the supply reservoir at Kensington Gravel Pits. The Chelsea Water-Works Company are also forming a reservoir in Battersea Fields. So far the mechanical impurities of the Thames water will be diminished; but the chemical impurities noticed by Dr. Granville and others will remain the same. Perhaps the simplest mode of getting rid of these would be by a system of intercepting sewers, such as we have already suggested in different parts of this Magazine; or, what would perhaps be much cheaper, the establishment at the outlet of each sewer, before the water entered the Thames, of a steam-engine, to pump it up, and force it along pipes to the distance of several miles in the country, where it might be used for the purpose of irrigation, or delivered to a basin or canal for the purpose of deposition. We have already, in the *Gardener's Magazine*, suggested a plan of filtering the water before forcing it along the pipes; of separating the mechanical impurities unfit for manure, such as stones, bricks, glass, &c.; and of compressing the manure into cakes, which, like oil-cake, might be sent to any distance by land or water. One great obstacle to every scheme of this kind will be, at least for a generation to come, the difficulty of getting the farmers, within 20 miles of London, to set a due value upon liquid manure. As to the solidified matter, the farmers in the north of England and Scotland, and even on the coasts of France and Germany, would purchase that in any quantity. Perhaps it may, at some future period, be practicable, in point of expense, to intermix some liquid with the water of the sewers, after it has been filtered, so as to dissolve the chemical union and precipitate the deleterious matters; but this, from the expense, is perhaps too wild a speculation to be hazarded at present. If it could be done, a great accession of valuable manure would be obtained in a solid form; and the pure water might be run off at once into the Thames.

Very few persons have any idea of the immense quantity of valuable manure which is carried off from every town and city by the common sewers. To be duly impressed with this, it is necessary to form a rough estimate of the extent of ground which may be manured by the liquid manure formed by a single family of, say, 8 or 10 persons, where the family washing is done at home. From our own observation and trial, we think a safe calculation for a family of 10 persons, including children, in the environs of London, living as people in moderate circumstances usually do, would be one acre. We feel confident that this is under, rather than exceeding, the amount; though, in country places, where the manner of living is quite different, and the quality of the food very inferior, the same estimate might not hold good, at least in the same degree. Supposing the rate of 10 persons to one acre to be a tolerably near approximation to the truth, and taking the population of London at 1,500,000, then the number of acres that this population would manure is 150,000, or a circle the diameter of which is about 17 miles; say, allowing for the space occupied by houses, a radius of 10 miles all round London, which we may suppose to occupy a circle of 4 miles in diameter. As the liquid manure would necessarily cost fully as much to force it from the town into the country, and to distribute it there over so immense a surface, as is required to force the pure water from the country to town, and to distribute it to the different houses, it follows that the cost of manuring 150,000 acres would be about the sum paid by the inhabitants of London to the water companies; viz. from 150,000*l.* to 200,000*l.*, which is from 20*s.* to 25*s.* per acre. What might be the probable amount of the solid manure procured either by mechanical filtration by machinery at the mouths of the sewers, or by deposition by gravitation in immense basins, or, what would be better, in long narrow canals parallel to the Thames, from Blackwall to Gravesend, we have no means of forming an estimate. We have no doubt, however, that the manure obtained by mechanical filtration, if afterwards compressed and rendered portable, would sell; and we think that mechanical filtration at two or three points along each sewer, and afterwards forcing the water by a steam engine, from each point, in iron pipes, into the canals for deposition, would be a better plan than any which has yet been suggested. At all events, it is a plan which might be tried on a small scale, and, if not found to pay, it could be relinquished without much loss.

We observe that a company is formed to carry Mr. Martin's plan into execution (see Vol. III. p. 360.), which, we hope, will lead to some useful results; because, at all events, it will direct public attention to the subject. The vice-presidents and the directors include a great many names of persons of rank and distinction; and to these, we trust, will be added the names of some of our principal engineers. The objects of the company are, 1. To exclude from the river, by intercepting sewers along its banks, the filth of every kind that now passes into it through the drains of London, and thereby insure a supply of pure water to the metropolis by the water companies; and, 2. To collect a supply of manure from the drains, so greatly superior to any other, as will effect a vast increase in the produce of every description of land.

The wooden Pavement proposed for Oxford Street cannot, I should think, be suitable for so great a thoroughfare; and I certainly do not see how the expansion and contraction of the blocks, from the variations of the weather, can be remedied. As connected with the subject, perhaps the following account of an *iron* pavement may be found worth attention: it is from *Walks through London*, by Dr. Hughson, 1817: —

"*Iron Pavement in London.* — Another material improvement is exhibited in Blackfriars Road, or Great Surrey Street, near the corner of Holland Street, in the application of iron in lieu of stone, as a substitute for pavement in the streets of this metropolis. This succedaneum consists of square pieces of cast iron, suitably shaped, roughed, and dovetailed. This experiment, made in the summer of 1816, has succeeded so far, that it has been resolved to pave some streets in the city in this manner, and to begin with Wood Street, Cheapside. It is computed that an iron pavement, well adjusted, will endure twenty years in a great thoroughfare; whereas it is too well known that a stone pavement very frequently requires repairs, and a new adjustment. The pieces already laid down resemble a batch of eight or nine rolls, and are united like the parts of a dissected map, without interstices, or even palpable joints. From their sustaining every kind of load, and the roughest of usage, there is no doubt of the ultimate success of this invention." Probably some of your readers may be able to supply further information upon this subject, and state why this paving has not been generally adopted. — *G. B. W. London, Oct.* 9. 1837.

The Wellington Monument. — I hope that the monument to commemorate the services of the Duke of Wellington, for which 10,000*l.* have been already subscribed, will be made worthy of the illustrious hero whom it is to honour, and of the nation whose gratitude it is to record. Let merit, and not interest, for once, be allowed to obtain a preference for the competing artists; and we shall then have something of a higher character than the Jack-in-a-box monument of Huskisson at Liverpool, or even than the testimonial to the noble Duke himself in Phœnix Park, Dublin. — *Id.*

New Houses of Parliament. — The first contract for the commencement of the works was entered into the beginning of last month, and they are, perhaps, the most important in regard to construction. They comprehend the formation of an embankment of 886 ft. in length, projecting into the river 98 ft. before the present embankment. The front will be in a line with the inner side of the third pier of Wesminster Bridge, in 4 ft. of water at low water; the whole to be surrounded by a river wall, 30 ft. high from the base, and 1141 ft. in length, with a curvilinear batter, and faced with granite. A terrace, 673 ft. long next the river, and 35 ft. wide, is to be formed in the front of the new houses, with an esplanade at each end, 100 ft. square, and landing stairs from the river, 12 ft. wide. The foundation wall of the front of the new building, the length of the terrace, and 30 ft. high, is included in the contract, as is also the whole surface of the front building, which is to be excavated and filled in with concrete, 12 ft. thick, forming a permanent and solid foundation for the superstructions; and a coffer-dam is to be made surrounding the work, 1236 ft. long, and 10 ft. wide, before they can be commenced.

The coffer-dam is to be first made by dredging a trench in the bed of the river, in the form of a segment of a circle, 27 ft. wide, and 8 ft. deep in the centre, which is done to allow the piles to be driven the more easily; two parallel rows of guide or main piles of whole timbers will then be driven at 5 ft. apart, leaving a width of 9 ft. between them transversely; to these piles will be fixed three tiers of walling of whole timbers, cut down and bolted together, one tier to be fixed at the top on a level with high water-mark, another level with the bed of the river, and a third midway. The piles and walling are then to be bolted across with iron bolts, 12 ft. long, forming a carcase for the inner or sheet piling; and the inner main piles are firmly braced, to resist the thrust and pressure at high water. The whole of the piles are 36 ft. long, to be driven through the gravel, and into the clay substratum 2 ft.: the top of the clay is 28 ft. below high water-mark; within the walling will be two parallel rows of sheet piling, the outer or river side being of whole timbers, and the inner or land side of half timbers. After all the piles are driven, the gravel forming the bed of the river between the piles will be excavated down to the clay, and the space between, 34 ft. high and 5 ft. wide, will be filled with clay and puddled; and there will be fender or guard piles at 10 ft. distance from the coffer-dam, with floating booms, to prevent craft running against the works. After the coffer-dam is complete, the bed of the river will be excavated the whole length of the river wall, 39 ft. wide and 12 ft. deep, to form the terrace: the front and inner wall will be 24 ft. 9 in. high, standing on a course of concrete, 1 ft. thick: upon which will be bedded two courses of 6-in. stone landings: the lower thickness of the wall will be 7 ft. 6 in., and the top 5 ft., with counterforts 16 ft. apart, 3 ft. 9 in. wide by 3 ft. 4 in. deep: the back of the wall will be carried up perpendicular, and the front will be faced with granite, laid in horizontal courses, 2 ft. thick, with bond stone 4 ft. thick, and 6 ft. 6 in. apart: the face of the granite will form a curvilinear batter of 8 ft. 6 in. in 22 ft. At 30 ft. distance from the inside of the river wall, will be built the front wall of the new building, which is to stand on a foot of concrete, with two courses of 6-inch stone landing; the lower part of the wall is 6 ft. 4 in. wide, and the top 4 ft 6 in., and 24 ft. 9 in. high. Between this wall and the river wall, a space, 30 ft. wide, 673 ft. 9 in. long, and 27 ft. high, will be filled in solid with concrete, to form the terrace; the foot of the river wall will be protected by sheet paling of whole timbers, 8 ft. long, with a walling along the top, bolted with iron bolts, 6 ft. long and 4 ft. apart, with screws and nuts let into the stone landings of the footings. The river wall to the front and side of the esplanade will be 1 ft. 2 in., and 2 ft. 3 in., thicker than the terrace wall; and the whole surface of the esplanade will be excavated and filled in with a solid bed of concrete, 20 ft. thick. (*Kentish Gazette*, Oct. 24.)

CORNWALL. — *An Obelisk as a Lighthouse.* — The Trinity Board have ordered that an obelisk, surmounted by a pole with a hollow ball on the top, shall be immediately built on the height of the Black Rock, between Pendennis and St. Mawes' Castle. This obelisk will be of great service to mariners in making Falmouth harbour. (*West Briton.*)

Hackney Church and Tower. — It was said some years ago, of a certain building at Brighton, —

> "On the outside are teapots all pierced round with holes,
> Relieved by extinguishers mounted on poles."

However grotesque and barbarous they may appear, certainly they have not the clumsy awkward appearance of the pepper-box with which the tower of Hackney church is inflicted, and which, unfortunately, is a conspicuous object for miles around. It is an extraordinary fact, that this monument of architectural stupidity should ever have been erected; but it is still more extraordinary, if there is anything like taste in the parish, that it should be allowed to continue. (*A Churchman of Hackney, Oct.* 1837, in *Morn. Chron.*, Oct. 26.)

LANCASHIRE. — *Trinity Church, Blackburn.* The foundation stone of this church was laid on October 10. The site is considerably elevated above the rest of the town, and the spire will, in consequence, become a prominent object from the surrounding country; and thus, by forming a leading feature in the distant view of the town, produce an interesting whole of what has hitherto been a confused assemblage of objects, all claiming nearly equal attention. The architect is Edmund Sharp, Esq. The church will be "built in the form of a cross, with a lofty tower and spire at the west end. The length of the church will be 130 ft., and the breadth 60 ft. The length of the transepts is to be 84 ft. The whole will afford accommodation in sittings to 1600 persons. The peculiarity of the design is most apparent in the east elevation of the building. Two large schools, capable of holding 600 children, are, by a judicious arrangement, assisted by the natural fall of the ground to the east, placed below the level of the plinth of the church, and extend to a distance of 60 ft. on each side of the church, thus forming a kind of basement to the building. They are lighted by a long row of simple lancet windows, and are separated by a sort of hall or council-room, for the teachers and visitors, which is situated immediately beneath the chancel, and which communicates by two flights of stone steps with the body of the church. This part of the building is entirely in the early English style of architecture; that is, in the style of the 15th century. Above these schools rises the chancel, with its side ailes conspicuous for a fine and large east window of seven lights, filled with bold and elegant tracery. Further back stand the transepts, and above all rises the tower with its lofty spire, the finial of which is 180 ft. above the sod at the west end, and 200 ft. above the base of the schools. The nave has columns and arches, with a clerestory, the windows of which are in pairs; these, as well as the aile windows, have good tracery. The spire, which will be so conspicuous an object from the surrounding country, in every direction, is pierced with small projecting windows in three heights. The whole of the church, exclusive of the schools, is designed in the style of the 14th century, and will, taken in conjuction with the latter, form a pile of building which is calculated to add considerably to the general appearance of the tower, and throw credit on the zeal of the reverend vicar, and the public spirit of the town. The following churches have been built within the parish of Blackburn, under the auspices of Dr. Whittaker, within the last eleven years: —

1.	Parish Church, St. Mary's, Blackburn,	consecrated	1826
2.	St. James's, Lower Darwen - -	do.	1829
3.	St. Mary's, Mellor - - -	do.	1829
4.	Trinity Church, Over Darwen - -	do.	1829
5.	St. Paul's, Blackburn - - -	do.	1829
6.	St. Stephen's, Tockholes - -	do.	1832
7.	St. Saviour's Chapel, Mellor Brook	licensed	1835
8.	Immanuel Church, Fenniscowles -	consecrated	1836
9.	St. Saviour's, Bamber Bridge -	do.	1837
10.	St. Mark's, Witton, not yet completed	begun	1836
11.	Trinity Church, Blackburn -	foundation stone laid	1837

Another, we hear, is shortly to be erected in Nova Scotia, Blackburn, and one also in the adjoining township of Livesey. (*Blackburn Gaz.*, Oct. 11. 1837.)

Wilts. — *A monumental Pillar* is now being erected on Wick Hill, in the parish of Bremhill, at the joint expense of Lord Lansdowne and the Rev. W. L. Bowles, as the lord of the manor, and vicar of the parish of Bremhill. On Sept. 14., Lord Melbourne, Lord John Russell, and the Marquess of Lansdowne, from Bowood, called at the Vicarage, and proceeded to the spot. The monument, on this elevation, will be a most picturesque object: it is already upwards of 30 ft. high, and the design is beautiful. (*Bristol Journal.*)

SCOTLAND.

Sir Walter Scott's Monument. — On Sept. 11., the foundation stone of a monument to commemorate the genius and virtues of the late Sir Walter Scott was laid in St. George's Square, Glasgow, with the usual masonic and other honours. The following is a copy of the inscription on the plate deposited in the foundation-stone: — "This Column, an humble Tribute to the Memory of SIR WALTER SCOTT, BARONET, is erected by the Citizens of Glasgow, that it may record their admiration of his genius, their deep sense of the honour which his name reflects on his Country, and their gratitude for the delight which they have received from his writings. This Foundation-stone was laid by the Hon. William Mills, Lord Provost of Glasgow, in presence of the Magistrates of the City and Suburbs, &c. &c. &c., on the Second Day of October, MDCCCXXXVII., in the First Year of the Reign of Queen Victoria." — (*Glasgow Chron.*, Sept. 18. 1837.)

ART. IV. *Retrospective Criticism.*

DESIGNS for Churches, &c. — I am a warm admirer of ecclesiastical architecture, and fully expected, ere this, to have seen in your Magazine (of which I am a constant reader) popular descriptions, with the requisite illustrations, of the following among other subjects; viz.: —

A description of the new Roman Catholic cathedral at Tuam.

An account of the extensive restorations and improvements which the venerable cathedral of Glasgow is at present undergoing.

Information respecting the improvements at the interesting church of Stratford upon Avon.

I perceive, by one of your recent Numbers, that a church is in course of erection in Lancashire, in the Norman style; and your Number for the present month (October) announces the progress of another, in the same style, at Dorking, in Surrey. Could you favour your readers with a copy of the designs of both or either of them? It is only from a periodical like yours that the public generally can obtain this species of information; and I trust that you will endeavour to supply them with it. I am happy to add, that it is understood here that the Bishop of this diocese intends to adopt measures for the restoration of our own venerable cathedral, by re-erecting it from the tower westward, a distance of about 175 ft.

I cannot help thinking but that you would render a very essential service to the public, at the present time, when so many additional churches are about to be erected, by communicating a series of the best designs, in the various orders of architecture, together with engravings of such (already erected) as may have received the approbation of the critic. — *An Amateur. Bristol, Oct.* 17. 1837. [We should be happy to comply with the request of our correspondent; but the necessary expense of engravings renders this, to the extent that would be satisfactory to him, quite impossible. — *Cond.*]

ART. V. *Queries and Answers.*

HIGH CLIFF, Lord Stewart de Rothsay's, near Christchurch, Hampshire. — I am informed that one of the most remarkable Gothic residences to be seen in England is being erected at this place. The entrance hall is sufficiently large to contain the old church, Marylebone. The outside of the building is covered with basso-relievos, collected by the noble proprietor, from Italy; and the interior is richly ornamented with *cinquecento* statues from the same country. My informant adds, that this castle is built on sandy clay, close by the sea shore, and that the waves are undermining the cliff at such a rate, that an embankment will very soon be necessary to preserve this building from being carried away. — *John Williams. Brighton, Sept.* 20. 1837. [We should be very much obliged to any of our readers who could give us some account, accompanied, if possible, with a sketch of this mansion, which we had ourselves, previously to receiving our correspondent's letter, heard was of great extent, and covered externally with curious sculptures.]

Roman Sewers. — Does any section exist of the Roman cloaca; or is it known whether either the ancients or the modern Italians practised the interposition of cystpools and hydraulic joints in their domestic communications with the public mains? — *J. R. Edinburgh, Oct.* 16. 1837.

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